Volume 93 Number 6

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

WHAT iron and steel executive has not yearned the past week for the fullest measure of mechanization! At Washington, a labor government upsets a recovering market with the uncertainties of its blanket code; the secretary of labor utters the dictum (p. 13) that iron and steel must build up its personnel to the 1929 level and in addition absorb labor liquidated by dying industries; organized labor, with nothing to lose and everything to gain, proposes (p. 14) to poll steel labor on the choice of company or national unions; NRA gets the open shop provisions (p. 11) out of the steel code. In the field, radical unions are sniping at labor with a platform (p. 18) of $20 for a 30-hour week, while strikes in western Pennsylvania menace the supply of coal.

Labor, Striking, Endangers Campaign for It

This week, certainly not later than next, NRA will promulgate the steel code, the hearing on which collapsed (p.17) when steel, probably doing the smart thing, reduced the labor content to a restatement of famous section 7a of NIRA . . . However, history was made when a woman laid down a long-term program for the industry—a program partially born of a 2-day inspection trip to Homestead and Sparrows Point (p. 18), with due recognition of courtesies extended by both Carnegie and Bethlehem . . . Popular as its program appears to be, NRA is not without its worries, harassed not only by consideration of 680 codes and its blue hawk campaign but also by restive labor which by striking may injure the re-employment program being conducted for it.

Steel Rate Now 54; Pig Iron Up 38 Per Cent

That production has been outrunning expansion in purchasing power has been a chief worry (p. 17) of NRA. . . . A corrective which steel does not like is a further lowering of its operating rate (p. 16) to 54 per cent. . . . This results largely from increasing uncertainties (p. 47), including disaffected labor, NRA blanket code program, and opposition of tonnage buyers of steel to a single-price structure. . . . Domestically, automobile manufacturers continue the largest buyers (p. 19), but with some letdown probable this month. . . . Reflecting a situation prior to the present easiness, pig iron production on a daily basis increased 38 per cent in July (p. 16), a net gain of 15 active stacks making 67 restored in four months.

Steel Beer Barrels Quench Auto Drought

The effect of this approaching slackness in automobile production, with its consequent lessened demand for bodies, will be mitigated for those body manufacturers who have supple-

Artistic enough to be a huge bird bath is this 400,000-gallon water tank built for Tallahassee, Fla., by Chicago Bridge & Iron Works. Six 33-inch tubular columns in a 41½-foot circle support it. Radial girders of the bottom are supported on the inner end by 4-foot girders, cantilevered over the cylindrical columns

mented their output with electric refrigerator units, washing machine tubs and steel beer barrels (p. 20). One large body interest has just added a steel quarter barrel, and its consumption of sheets has reached the proportions of 1000 tons weekly. . . . Necessity for efficient cleaning of steel beer barrels before pitching or coating operations has mothered development (p. 34) of three new types of sandblasting machines for this work.

Diversifies via the Kitchen Sink

Also by way of diversification, an Ohio manufacturer of pressed steel products has introduced a line of kitchen sinks, of one-piece formed steel construction and finished in acid-resisting enamel (p. 28.). Available in 15 patterns and 20 sizes, these sinks are light weight without any sacrifice of strength or rigidity; 64 dies weighing almost 100 tons were necessary to tool up for production. . . . A German builder of equipment also has diversified by constructing an unusually large 3-roll bending machine for forming heavy steel plates into pipe (p. 34). Plates up to 28 feet long and 1¾ inches thick can be handled by the rolls, two of which weigh 23 tons, the third 55 tons. . . . A new instrument measures (p. 43) the flatness of machined, ground or scraped plates.

Drying the Lubricant Secret of Cold-Drawing

Successful cold-drawing of seamless steel tubing depends largely upon the quality and thoroughness of drying the lubricant. If the tallow and flour dope coating given the inside and outside surface dries unevenly or chars, trouble is certain at the draw bench. A large tube maker has installed (p. 25) a continuous gas-fired oven designed to dry uniformly and economically tubing in lengths from 6 to 33 feet and diameters from ½ to 10 inches. Tubes are charged by crane; equipment for heating and recirculating the air is installed on the mill floor, air being forced down to the bottom of the oven, which is below the floor level, and up around the tubes.

Miscellany for the Engineering Mind:

Called the most unusual house at the Century of Progress exposition in Chicago is the one built on a 19½-foot radius around a 3-foot diameter axis, a steel pillar fabricated in pipe form from ⅛-inch plates (p. 29). Steel beams project from this axis to concrete-filled tube-type vertical members. Steel joist floor construction is employed. . . . Highway guards of wire rope stretched between posts are increasingly popular, 3-strand galvanized cable being generally used (p. 38). Minimum breaking strength is 15,000 pounds. . . . Open-hearth fuel port design, in which a water-cooled ring protects and maintains the end while development of protecting brickwork permits a considerable adjustment of the burner and the axis of firing, is especially recommended (p. 30). A ring having internal clearance of about 24 inches high and 15 inches wide will meet most requirements.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

Assails Direct Dealing In Scrap

"We wish to suggest that Section E or Schedule I which covers list of unfair practices be amended. This section concerns itself with a prohibition against rebates, commissions, credits, etc. Our amendment is that no member of the code shall purchase or accept in exchange any scrap from any customer to which he may sell steel.

"During the past two years the practice has developed among certain steel corporations whereby they take back the resulting scrap from the customers on certain terms. These reciprocal deals involve rebating on the price of steel and also involve restraint of trade among the steel mills themselves because other competitors in trying to sell steel find themselves foreclosed from competition. . . .

"If it is desirable under this act that the steel industry under this code shall stabilize its price structure I respectfully submit that this price structure shall be defeated if these reciprocal deals with the rebating habits be permitted to continue.

"These direct deals also involve discrimination against the scrap dealers themselves, because we maintain that when a steel corporation takes back scrap from its customers it does not force them to stick to the specifications as strictly as they insist the scrap dealers accept the scrap from its customers. They are not subject to the rejections to which the dealer of scrap is subjected and certainly the scrap accepted or purchased in exchange from the customers is not subjected to suspension at the whim and caprice or on account of market conditions that may prevail at any time.

"But I want to put this not on the basis of unfair competition or rebating, but on a much broader basis, contemplated by this law, and that is the conservation of natural resources. The service of the scrap iron industry has a direct relationship to the conservation of the limited iron ore reserves of the United States because for every ton of scrap used, two tons of iron ore are conserved for future generations, and were it not for the increasing use of scrap, we might be facing a critical condition in a comparatively short period with reference to our iron ore reserves.

"We insist that these reciprocal arrangements tamper with the free and open markets which are the salvation of the steel industry. We insist that these deals are causing the disintegration of the scrap collection and distributing machinery, and if permitted to continue without any safeguarding, we state positively that millions of tons of scrap so vital in the future to the steel industry cannot be collected for use by the industry in view of the fact that the initiative of the scrap dealer is squelched and inhibited."

—From statement of BENJAMIN SCHWARTZ, director general of Institute of Scrap Iron and Steel, before hearing on steel code.

July 31, 1933.

NRA Studies Testimony Taken In Code Hearing; Action Near

STEEL'S code of fair competition —from which Section 2 of Article IV and Schedule C have been eliminated—now is undergoing the scrutiny of NRA. Last Friday, members of the administration believed that the remainder of the week would be occupied in digesting the code, reviewing the testimony and briefs, discussing points in dispute and conducting negotiations, in accordance with the customary procedure after a hearing has been held.

General Johnson, on Friday morning, declared that a week or 10 days probably would elapse before the code will be in shape to present to President Roosevelt. At that time it will be submitted to the industry for its approval.

Questions and Answers

Meanwhile, Robert P. Lamont, spokesman for the industry, has filed with NRA a reply to questions with which he was plied at the conclusion of the presentation of his statement last Monday.

Provisions to remove unfair and competitive practices constitute the greatest safeguards of the interests of steel consumers, he maintained. With one exception, the steel code does not attempt to fix or control prices and code members are free to establish their own base prices.

Once such prices are established, according to Mr. Lamont, members are forbidden to sell below without due notice. Since lists are open to inspection, any consumer at any time may ascertain minimum prices. The exception above noted has to do with the power of the board to investigate any base prices deemed to be unfair and to rectify the situation if found necessary.

Mr. Lamont also emphasized that any such changes made by institute directors, together with the reasons therefor, must be filed with the President. The power conferred upon the board in this respect is not intended and in practice cannot be used for purposes of exercising general price control, Mr. Lamont declared.

Basing points listed in the code are substantially those now governing, Mr. Lamont said. The differences in the number of basing points of various products arise from the geographical distribution of production. Any great change, Mr. Lamont warned, would upset normal operations which NIRA does not intend.

Consideration of the code was simplified by the surprise move of NRA and steel industry leaders in divorcing the controversial labor relations issue from the document. Agreement on this maneuver was reached two days before the hearing. With the labor problem removed from the realm of argument, the discussion on Monday was confined principally to hours per week, wages, protection of consumers and pricing practice. By this coup, the hearing —which might easily have developed into a long drawn out battle ending in deadlock—actually consumed only six hours.

Steel's strategy was simplicity itself. Its sole spokesman, Mr. Lamont, formally presented the code and explained some of its provisions. Except for his part in withdrawing the labor relations section and several other brief appearances on the stand, this was the extent of the industry's participation in the hearing. It was apparent that steel leaders desired the other side to carry the burden of argument.

The Code Hearing

Date—Monday, July 31.
Place—Auditorium of the department of commerce building, Washington.
Attendance—600, the majority coatless.
Temperature—In the uncomfortable nineties.
Hour—On the stroke of 10 a. m.

DEPUTY ADMINISTRATOR KENNETH M. SIMPSON'S gavel sounded thrice. The amplifying system carried his voice to the far corners of the room: "I have the honor to present General Johnson."

"This is of course an important day in the development of this whole idea," declared the chief administrator. "To my certain knowledge the executives of the American Iron and Steel institute have been in almost constant sessions since the opening of our work, and that means day and night. . . I know we start off with a feeling of great co-operation and support which we have had from the very beginning to this moment."

Donald Richberg, counsel of NRA, outlined the form of procedure to be followed throughout the hearing. In response to the call of Mr. Simpson, Robert P. Lamont, president of the American Iron and Steel institute, mounted the platform. As he was about to speak, somebody discovered that Secretary of Labor Perkins had not arrived. Bruskly General Johnson ordered a 10-minute recess. Eagerly the photographers grasped the unexpected chance to snap the crowd.

Miss Perkins arrived, and took her place on the labor side of the rostrum. Mr. Lamont began presentation of the code at 10:15 and finished exactly at 11 o'clock.

Then came the moment that was intended to be dramatic. General Johnson said something about the procedure in the presentation of codes. "From the standpoint of the law . . . it is our function to determine whether or not there is any provision inserted in the code that may or may not seem to us to shade or qualify the statute. In referring to Section 2, the second paragraph, and to the schedule that is incorporated therein by reference, while probably it is a border-line case, it seems to me that that matter is inappropriate in that particular section of this code. . ."

Industry's Stand Reiterated

Mr. Lamont advanced to the microphone: "Mr. Administrator, . . . I am not surprised at the question and have rather expected it. Section 2 of Article IV was put into the code merely to express the belief of the industry that the open shop principles which have prevailed throughout the industry for many years should be maintained, and that the principles of collective bargaining should be established and maintained in a form which experience has shown to be satisfactory to the industry and its employes. . .

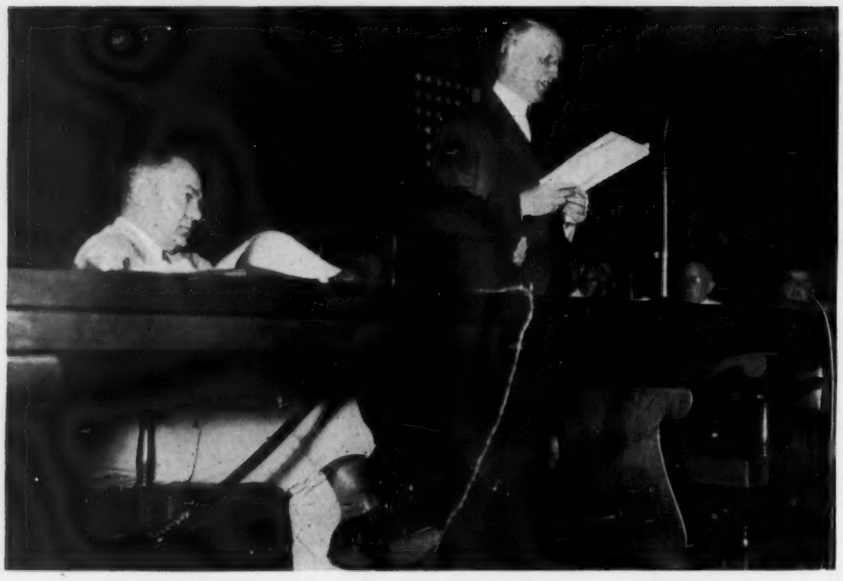
"I believe that the section can be omitted from the code without materially altering it. I am willing to recommend it be omitted, and I believe the committee will concur in my recommendation.

"It should be distinctly understood, however, that the omission of the section does not imply any change in the attitude of the industry on the parts therein referred to; that the industry believes that the employe representation plans now in effect are desired by its employes. . . . and that the section will be omitted for the sole purpose of avoiding the necessity of considering at this hearing any questions that are not fundamental to the code.

"If you will have a recess for a few minutes, so that I can confer with my associates, I believe we can give you an answer very promptly."

General Johnson: "We'll recess for 10 minutes."

A crescendo of conversation swept the hall. "Window dressing," vouchsafed a perspiring president. "Somebody cooked up a deal," commented



Acme Photo

STEEL'S SPOKESMAN BEFORE NRA: Robert P. Lamont, president, American Iron and Steel institute, explaining the steel code at the hearing in Washington, July 31. Hugh S. Johnson, administrator of the recovery act, is shown at the left. Amplifiers were used for the benefit of the 600 in the audience in the department of commerce auditorium

his neighbor. Flashlamps and the temperature made one think of heat lightning.

The gavel! The noise subsided. Mr. Lamont strode to the microphone. He said, "The board of directors of the Iron and Steel institute have unanimously agreed to omit the regulations in Section 2."

General Johnson: "As I understand it, Section 7a of the act is simply recited in this code without modication?"

Mr. Lamont: "Yes sir."

The audience applauded. Deputy Simpson called to Mr. Lamont, "Will you yield to the Secretary of Labor?" "Gladly," was his reply.

As Mr. Simpson was introducing her, Miss Perkins stepped forward, shook hands with Mr. Lamont, and then, turning to the loud speaker, congratulated the steel industry for its action in withdrawing the controversial portion of its code.

As shown in the accompanying summary, Secretary Perkins devoted her discussion mainly to suggestions for revising the code's provision for maximum hours and minimum wages. The applause at the conclusion of her plea had scarcely died away when Counsel Richberg launched into a cross-examination of Mr. Lamont on the control of prices. "May I ask you to point how where either in code or otherwise protections for the consumer are to be found . . .?"

Mr. Lamont: "I would prefer, if I might, to give the matter some consideration. I would prefer to have a little time and to make a reply later."

Mr. Richberg asked question after question, in each case trying to get a statement as to the machinery for protecting the public against unduly high prices. He phrased his questions diplomatically. He was considerate of the feelings of the witness, almost to the point of overdoing it. He pleaded for off-hand opinions.

In conclusion Mr. Richberg stated that planning committees had been adopted in connection with other codes, with the consent of the industry. Such planning committee consists of three public representatives, without vote. "Do you see any reason," he asked, "why that theory should not be applied in the consideration of this code from the standpoint of supplementing the board of directors of the institute with such public representatives, without vote, as might afford some assurance of protection to the consuming interests?"

Mr. Lamont stated that it is a matter which would have to be referred to the board. He promised to refer the matter.

When the hearing reconvened at 2 o'clock, General Johnson was absent. He did not reappear during the afternoon. Mr. Lamont announced that southern employes had agreed to a minimum wage of 30 cents per hour. William Green presented union labor's code, which is summarized elsewhere.

Following Mr. Green were a score or more representatives of labor unions, most of whom either declared their intention of filing briefs, or who simply endorsed the statements made by Mr. Green.

Variations from the labor theme occurred when W. H. Jackson, vice president, Steel Plate Fabricators association, and H. A. Fitch, president, Kansas City Structural Steel Co., speaking for the Central Fabricators Association of Chicago, protested against certain provisions of the code in relation to basing points.

Benjamin Schwartz, director general of the Institute of Scrap Iron & Steel, introduced a brief protesting against the practice of reciprocal dealings in scrap. (See under "Voice of Industry," page 10, this issue.)

The parade of witnesses continued until 5:30 at which time Deputy Simpson said: "It is the custom and rather desirable practice in connection with these hearings to provide ample time for the study of the briefs and study of the testimony and also to carry out certain discussions and negotiations that follow presentation of a code and hearing of the witnesses. I may say that there will be allowed a period of 24 hours for the introduction of further briefs.

"We will now adjourn to reconvene at the call of the administrator."

Robert P. Lamont

"Mr. Administrator, I appear as president of the American Iron and Steel institute to present the code of fair competition of the iron and steel industry. The institute includes in its membership approximately 98 per cent of all the producers of pig iron and steel ingots in the United States. . . ."

"The industry, as defined in our code, in normal times employs 400,000 persons. In addition . . ., many other persons are employed in collateral branches, such as casting, forging, fabricating, etc. It is estimated that in normal times the total number of persons employed in all such work exceeds 900,000. The wages and salaries of all these employes amount to more than $1,500,000,000 a year.

Mr. Lamont then outlined the provisions of the code, article by article. In discussing the proposal for a 40-hour week, he pointed out that the industry was the leader in the share-the-work plan, is "proud of the results accomplished," and in the code states "its intention to continue that policy."

He then referred to the accompanying summary of "employment conditions and rate of operations in the steel industry." Commenting on this tabulation, he said:

"In considering the question of the working week, the institute assumed it was imperative to establish such maximum hours per week as would enable the industry as a whole to operate at a fair normal rate. We believe an average rate of the operations in 1929 and 1930 is fairly normal.

"In these two years, the reporting companies employed an average of 341,654 employes, who worked an average of 49.5 hours per week dur-

ing this period. . . . On July 1, 1933, there were 338,683 persons available for service for such companies. Of this number, 288,945, or 85.3 per cent, were being given some work and . . . . were working at an average rate of 41.9 hours per week on or about that date, when operations did not exceed 50 per cent of capacity. No work was being given to 49,738 individuals, or 14.7 per cent of the available force.

". . . . In order to operate at the 1929-1930 average rate of 75.3 per cent of capacity and at the operating efficiency then prevailing on the basis of a maximum 40-hour week, 424,083 employes would be required. But, as stated, the total number of men available and looking to these companies for work is 338,683. Therefore, the excess over the present available supply of men required on the basis of a 40-hour week is 85,400.

". . . . The number of workers now available is not sufficient to permit operations at the 1929-1930 average on a 40-hour maximum week. It is estimated on a basis of a 60 per cent rate of operations and a maximum 40-hour week substantially all of the 49,738 employes who were not receiving any work on July 1, 1933, would be given employment, if qualified and available for work.

Commenting on minimum wages for common labor, Mr. Lamont declared that the code establishes a minimum of 40 cents an hour in districts which produce 65 per cent of the output of the industry. The 40-cent rate is only 9.1 per cent less than the highest rate paid during the past 11 years, when living costs were far above the present level.

The institute president referred to the financial losses of the industry during the depression. "A compilation of 1410 corporations, including 56 industries, shows that 21 of the light industries earned $473,000,000 last year. The remainder, almost entirely in the heavy industry group, suffered losses of over $578,000,000. The net loss of the 56 industries was, therefore, over $105,000,000. The steel industry, with its loss of $161,000,000 bore the largest share of that loss of $578,000,000 and lost more than the net loss of all the other industries in the aggregate. . . . Notwithstanding all these losses, the industry has . . . . put into effect an increase in wages involving an immediate increase in cost to members of at least $5,000,000 a month."

Secretary Perkins

"The problem before the recovery administration today is how to revive the purchasing power of the wage earners attached to the steel industry to approximately its 1929 level and to re-employ the persons attached to that industry and those other who have come into adult manhood during the years of the depression in the steel communities at rates sufficient to add to the purchasing power in proportion to the increase in population. . ."

Secretary Perkins quoted census figures showing the irregularity of employment in the steel industry. "My purpose is . . . to call to the attention of those in positions of responsibility in this industry that the conditions

Employment Conditions and Rate of Operations in Steel Industry

Company	Ave. No. of employes, 1929 and 1930	Ave. No. of hours worked per man per week, 1929 and 1930	Ave. per cent operations, 1929 and 1930	Total No. of employes available for and wanting work on or about July 1, 1933	Total No. of employes being given some work on or about July 1, 1933	Ave. No. of hours worked per man per week in col. 6	Per cent employes given some work col. 6 divided by col. 5	Per cent operations at or about July 1, 1933	No. of employes at present getting no work, col. 5 minus col. 6	If max. hrs. of work per man were limited to 40 hrs., how many men on basis of ave. operations in 1929-30 would be given work? Total No.	If max. hrs. of work per man were limited to 40 hrs., how many men on basis of ave. operations in 1929-30 would be given work? Excess over col. 5
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
U. S. Steel Corporation	139,622	47.5	78.6	138,694	115,466	41.6	83.3	55.0	23,228	165,931	27,237
Bethlehem Steel Co.	43,679	58.2	76.0	44,760	33,848	35.7	75.7	44.5	10,852	58,073	13,373
Republic Steel	22,322	51.1	62.0	21,446	19,349	43.4	90.2	51.5	2,097	28,532	7,086
Jones & Laughlin	16,753	48.9	76.9	15,072	14,439	41.4	95.8	48.2	633	20,490	5,418
Youngstown Sheet & Tube	15,981	57.0	75.5	15,667	13,873	37.5	88.5	50.4	1,794	22,707	7,040
American Rolling Mill	9,477	45.6	65.3	8,867	8,287	46.1	92.5	69.8	580	10,804	1,937
National Steel Corp.	13,158	52.4	71.6	14,689	14,689	47.6	100.0	81.5	.....	17,242	2,553
Inland Steel Co.	6,824	46.3	81.9	6,500	6,231	42.3	95.9	63.3	269	9,190	2,690
Wheeling Steel	11,043	52.3	77.5	13,736	12,633	46.3	92.0	80.8	1,103	14,426	690
Colorado Fuel & Iron Co.	6,246	40.9	79.8	5,146	2,696	28.2	47.7	19.5	2,430	5,884	738
Crucible Steel	8,022	50.0	71.0	8,022	5,358	38.0	67.0	46.0	2,664	9,750	1,728
Corrigan McKinney	3,223	46.9	65.5	3,244	3,187	50.3	98.2	87.4	57	3,739	495
Newton Steel	2,639	57.3	51.0	1,367	1,293	52.5	93.6	36.5	74	3,746	2,379
Otis Steel Co.	3,685	54.1	74.2	4,034	4,034	49.3	100.0	72.5	.....	5,408	1,374
Pittsburgh Steel	5,962	48.1	64.2	6,126	4,998	40.8	81.6	39.8	1,128	7,159	1,033
Gulf States Steel Co.	2,157	62.7	73.6	2,282	2,152	49.3	94.3	74.2	130	3,368	1,086
Roebling's Sons	4,464	46.9	81.0	4,495	3,225	44.7	71.7	49.0	1,270	5,240	745
Spang Chalfant	3,102	52.2	69.0	2,361	2,289	37.7	96.9	42.3	72	4,047	1,686
International Harvester	2,800	42.6	75.8	2,236	1,936	40.7	86.4	46.7	300	3,020	784
Granite City Steel	2,278	42.6	60.4	2,410	2,360	41.0	97.9	62.5	50	2,426	16
McKeesport Tin Plate	2,870	43.0	89.0	2,876	2,876	48.3	100.0	100.0	.....	3,085	209
Sharon Steel Hoop Co.	1,983	52.5	73.3	2,135	2,008	47.3	93.8	56.3	127	2,612	477
Newport Rolling Mill	1,403	46.9	82.7	1,009	1,009	40.3	100.0	58.7	.....	1,645	636
Continental Steel Corp.	2,409	44.2	75.0	2,352	2,333	48.2	99.1	70.0	19	3,379	1,027
Acme Steel Company	1,627	44.2	66.8	1,513	1,488	53.3	98.5	74.1	25	1,796	283
Lukens Steel Company	2,000	57.0	89.6	1,862	1,534	46.8	82.4	50.2	328	2,821	959
Byers (A. M.) Company	1,491	41.2	50.3	1,286	1,009	34.4	78.5	17.2	277	1,398	112
Keystone Steel & Wire	1,196	47.4	85.0	1,160	1,147	46.8	98.7	85.0	18	1,373	213
Central Iron & Steel	811	65.6	70.8	849	779	59.8	91.2	50.0	70	1,325	476
Phoenix Iron Company	857	55.5	85.1	685	662	44.0	96.6	50.0	23	1,017	332
Laclede Steel Company	918	57.2	64.0	1,212	1,192	52.0	98.3	57.6	20	1,452	240
Worth Steel Company	702	56.9	57.1	650	565	47.6	87.0	28.1	85	998	348
Total	341,654	49.5	*75.3	338,683	288,945	41.9	85.3	54.7	49,758	424,083	85,400

*American Iron and Steel Institute total average steel production rate—1929-30.

present a great opportunity for leadership. Unemployment and economic insecurity constitute a challenge to that leadership."

"About 25 years ago a similar challenge and opportunity presented itself to the iron and steel industry. It rose to that opportunity and met that challenge when it took the leadership in inaugurating and promoting industrial safety work. . . I suggest that the challenge of unemployment and insecurity be met in the same way and in the same spirit. . .

". . . It is disappointing to find that in framing Section 3 of the code the industry did not rise to the opportunity of ruling out the 7-day week from the steel industry, the 12-hour day and all unduly long working hours. The proposal for an *average* of 40 hours per week within any six-month period not only permits these evils to stand . . . but it will intensify irregularity of employment by stimulating unduly long hours during some months to be alternated with very little work during other months so that the average may be kept down to 40 hours.

"I am convinced that the maximum of 40 is too great to accomplish the purposes of wide re-employment. . . Thirty-six hours per week which is six hours a day for six days, or 30 hours, which is six hours a day for five days, offer interesting opportunities. . .

"The proposal to divide the country into 21 separate wage districts with differentials of 2 and 3 cents an hour needs to be carefully examined. It has the appearance of an arbitrary fixing of wages that can hardly be justified by differences in costs of living . . .

"Equally important is the necessity of making the minimum rate of pay a weekly rather than hourly rate."

Other points stressed by the Secretary of Labor were:

The code says no member shall "knowingly" employ a person under 16 years of age. The word "knowingly" should be deleted.

Suggestion that a "provision against labor espionage is important."

Suggestion that the steel industry take steps to establish "reserves for maintaining wages, incomes and purchasing power in times of unemployment."

Provision for time off for eating for every shift.

William Green

William Green, president of the American Federation of Labor, presented a code of 5 sections "in the interests of the workers in the iron and steel industry."

Section 1 quotes the principle of collective bargaining in the words of Section 7a of the act.

Section 2 provides for a maximum of 30 hours in any one week, except that this may be exceeded to a "fair and reasonable extent in the case of executives, those in supervisory capacities or in technical work, and those employed in emergency work." Emergency workers shall receive time and a half in excess of six hours in any day.

Section 3 provides for a minimum hourly rate of 60 cents with a minimum weekly rate of $18, to be guaranteed regardless of whether employe is on time rate or piecework. Employes now receiving in excess of the minimum rate shall receive at least 70 per cent of the weekly compensation of similar work in 1929.

Section 4 prohibits employment of persons under 16 years of age, "provided that in manufacturing and mechanical work no person under 18 years shall be employed."

Section 5 proposes that an advisory council on industrial relations be formed. Members shall be selected by the President of the United States as follows: Three members from 10 names submitted by the American Iron & Steel institute, three members from 10 names submitted by the president of A. F. of L. and a chairman designated by the President of the United States. This council shall be the agency of NRA for investigating matters of current friction in industrial relationships.

After explaining the code Mr. Green charged that the majority of workers in the iron and steel industry oppose representation plans. He urged that all employes be given an opportunity to vote secretly on what kind of union they prefer.

Revise Soil Pipe Code; 27 Hours, 32 and 40 Cents

A compromise between the cast iron soil pipe industry and representatives of labor was effected at the hearing in Washington, Aug. 2, the revised code providing for a 27-hour week with a minimum wage of 32 cents an hour in the South and 40 cents in the North.

The Emory Type & Foundry Co., Anniston, Ala., protested sections of the code which would bring it into association with the Cast Iron Soil Pipe association of which it is not a member.

The employer code offered a 30-hour week with wages of 25, 30 and 35 cents an hour. The metal trades department of the American Federation of Labor proposed a 24-hour week and minimum guarantee of $25.

Fabricators To Study Code

The American Institute of Steel Construction, Inc., is expected soon to announce the date for a meeting of structural steel fabricators to perfect the industry's code. Pittsburgh may be named as the meeting place.

Foundry Groups Meet on Code

CO-OPERATIVE action between trade associations representing the four branches of the foundry industry was assured through a conference at Cleveland, Aug. 4.

At the invitation of Walter L. Seelbach, president of the steering committee of the gray iron industry, representatives of the four agencies designated to represent gray iron, steel, malleable and nonferrous producers met to reconcile factors in codes prepared for these four branches under NIRA.

The organizations represented were:

Steel Founders Society of America: Col. Merrill G. Baker, executive vice president, and F. A. Lorenz Jr., American Steel Foundries, Chicago.

Steering committee representing the gray iron industry: Walter L. Seelbach, Forest City Foundries Co., Cleveland, president, and A. J. Tuscany, Gray Iron institute, Cleveland, secretary.

Malleable Founders' society: R. R. Fauntleroy, Moline Malleable Iron Co., St. Charles, Ill., president; and Carl Gibbs, National Malleable & Steel Castings Co., Cleveland; and Robert E. Belt, secretary.

Nonferrous Foundry Association for Industrial Recovery: N. K. B. Patch, Lumen Bearing Co., Buffalo, president, and Sam Tour, New York, secretary.

To consolidate the interests of the entire foundry industry and to assure adjustment and reconciliation between the various branches of the industry, it was decided to establish the Founders' Council of representatives from each of the four branches will be elected and D. M. Avey, editor of *The Foundry*, has been appointed secretary.

Steel Founders Reorganize; Approve Code for NRA

At a meeting of the entire steel foundry industry held in Cleveland, Aug. 4, the Steel Founders' Society of America was reorganized as an unincorporated body, a complete new constitution and by-laws were adopted, and a code approved for submission to Washington.

President T. H. Harvey, Ohio Steel Foundries, Lima, O., announced that the newly-formed society embraces more than 90 per cent of the capacity and production of steel castings in the United States. He introduced Mr. Lorenz, of the American Steel Foundries, Chicago, chairman of the board of the society, who presented the necessary resolutions covering reor-

(*Please turn to Page* 66)

July Pig Iron Gains 37.8 Per Cent as 15 Stacks Go In

MAKING a gain of 37.8 per cent over June, average daily production of coke pig iron in the United States in July rose to a level of 58,108 gross tons per day and established itself as the best output since May, 1931. At the same time, operating blast furnaces climbed from 90 on the last day of June to 105 on July 31.

The 58,108-ton rate of July exceeded the 42,165 tons of the preceding month by 15,943 tons. In four months, production has expanded 40,624 tons above the 17,484-ton low point in March, an increase of 232 per cent. The rate of production in May, 1931, was 64,355 tons and in July, one year ago, 18,394 tons.

Total output in July was 1,801,345 tons, this being a gain of 536,392 tons, or 42.4 per cent, over the 1,264,953 tons of June. This figure also was the best since May, 1931, when production was 1,995,001 tons. In July, one year ago, 570,222 tons was made.

For the seven months ended in July, production has aggregated 6,246,095 tons, as compared with 5,734,742 tons for the corresponding period of 1932. Thus, for the first time since the depression started has cumulative production exceeded that of the similar period of the preceding year. The surplus in this case amounts to 511,353 tons. The seven-month total for 1931 was 12,560,392 tons.

Relating production to capacity, operations in July were at the rate of 42.2 per cent, against 30.6 per cent in June, 20.9 per cent in May, and 13.0 per cent in July, 1932.

The 105 blast furnaces making iron on July 31 was the largest total since May, 1931, when the same number was in blast. From a low point of 38 last March, active units in four months have increased 67 stacks. During the month, 16 furnaces resumed operations and only 1 was taken out of blast, making a net gain of 15. Of the steelworks or nonmerchant class, 11 were blown in and none blown out; of the merchant class, 5 were blown in and 1 was blown out.

Furnaces resuming during July were: In Ohio: Ohio No. 5, Carnegie Steel Co.; Toledo A, Interlake Iron Corp.; Lorain No. 4, National Tube Co.; Ohio D, Youngstown Sheet & Tube Co. In Pennsylvania: Donora No. 2, American Steel & Wire Co.; one Eliza, Jones & Laughlin Steel Corp.; Duquesne No. 5 and Isabella No. 3, Carnegie Steel Co.; one Monessen, Pittsburgh Steel Co. In New York: Port Henry No. 2, Witherbee-Sherman Co.; Buffalo No. 2, Republic Steel Corp.; one Buffalo, National Steel Corp.; Standish, Chateaugay Ore & Iron Co. In Alabama: Woodward No. 2, Woodward Iron Co.; Ensley No. 3, Tennessee Coal, Iron & Railroad Co. In Colorado: Minnequa, Colorado Fuel & Iron Co.

The only stack taken out of blast in July was the Rockdale, Tenn., furnace of Tennessee Products Corp.

AVERAGE DAILY PRODUCTION

	1933	1932	1931	1930
Jan.	18,348	31,336	55,337	91,573
Feb.	19,752	33,122	61,114	101,640
Mar.	17,484	31,194	65,448	104,930
Apr.	20,786	28,524	66,986	106,371
May	28,784	25,282	64,355	104,564
June	42,165	20,867	54,599	97,817
July	58,108	18,394	47,170	85,110
Aug.	.....	17,035	41,264	81,455
Sept.	.....	19,788	38,947	75,893
Oct.	.....	20,795	37,831	69,851
Nov.	.....	20,858	36,727	62,182
Dec.	.....	17,650	31,625	53,732
Av.	29,464	23,699	50,035	86,141

JULY IRON PRODUCTION

	No. in blast last day of month July	June	Total tonnage Merchant	Nonmerchant
Ohio	28	24	39,437	460,439
Penna.	35	30	49,300*	534,163*
Alabama	9	7	75,040	56,641
Illinois	7	7	21,746	128,224
New York	8	4	12,519	69,881
Colorado	1	0		
Indiana	7	7	882	241,734
Maryland	3	3		
Virginia	0	0		
Kentucky	1	1		
Mass.	0	0		
Tennessee	0	1		
Utah	1	1	5,950*	105,389
West Va.	3	3		
Michigan	2	2		
Minnesota	0	0		
Missouri	0	0		
Total	105	90	204,874*	1,596,471*

*Includes ferro and spiegeleisen.

MONTHLY PIG IRON PRODUCTION

	1933	1932	1931
Jan.	568,785	971,437	1,715,443
Feb.	553,067	960,550	1,711,192
March	542,013	967,015	2,028,906
April	623,606	855,734	2,009,582
May	892,326	783,769	1,995,001
June	1,264,953	626,015	1,637,998
July	1,801,345	570,222	1,462,270
T'l 7 mo.	6,246,095	5,734,742	12,560,392
Aug.	.....	528,105	1,279,205
Sept.	.....	593,640	1,168,436
Oct.	.....	644,648	1,172,781
Nov.	.....	625,753	1,101,820
Dec.	.....	547,179	980,377
Total	.....	8,674,067	18,263,011

Steel Rate Down 1 Point to 54%

AN EASIER operating situation in most important districts lowered the national steel rate for the week ended Aug. 5 a point to 54 per cent. The trend still continues downward as consumers are refraining from making fresh commitments, pending a clearer outlook on the effects of the NRA program, while the more uncertain labor situation, especially in the coal mining districts, also is a deterrent. Details for various districts follow:

Chicago

Reduced schedules at two plants largely were responsible for lowering steelmaking operations the past week to 54 per cent, a decrease of 4 points. While further declines this month are expected to be moderate, producers generally anticipate the resumption of the upward trend to be deferred until October. Blast furnace schedules are steady with 13 of 36 steelworks stacks and one merchant furnace in blast.

Pittsburgh

Steelmaking here was at 48 per cent through last week, down 1 point from the week previous. This week the steel ingot rate probably will hold to 48 per cent, unchanged. The blast furnace rate continues with 23 of 53 steelworks stacks active, none additional having been added since two weeks ago and the prospects being that the current coal strike may place several now active on the temporarily inactive list. Finishing mill rates here are led by tin plate at 95 per cent, sheets at 60 per cent, wire mills at 75 per cent and strip steel at 55 per cent. Other products are slower at less than 50 per cent, although bars

RATE OF OPERATION

(Relation of Production to Capacity)

	1933[1]	1932[2]	1931[3]	1930[4]
Jan.	13.3	22.1	38.4	65.0
Feb.	14.3	23.4	42.5	72.1
March	12.7	22.0	45.4	74.5
April	15.1	20.2	46.5	75.4
May	20.9	17.9	44.7	74.2
June	30.6	14.7	37.9	69.3
July	42.2	13.0	32.7	60.3
Aug.	.....	12.0	28.7	57.8
Sept.	.....	14.0	27.0	53.8
Oct.	.....	14.7	26.3	49.6
Nov	.....	14.7	25.5	44.1
Dec.	.....	12.5	22.0	38.1

[1]Based on capacity of 50,312,975 gross tons. Dec. 31, 1932; [2]on capacity of 51,598,175 tons; [3]on capacity of 52,515,875 tons; [4]on capacity of 51,490,680 tons. Capacities by American Iron and Steel institute.

and shapes are close to the latter percentage.

Eastern Pennsylvania

Steelmaking operations in the central eastern seaboard district are practically unchanged at 43 to 44 per cent. Assurances of leading producers that their August operations would parallel those for July would seem to indicate relatively little change this month.

Cleveland

Steel ingot production here for the week ended Aug. 5 held at 79 per cent, unchanged from the preceding week. National Tube Co., Lorain, O., is operating 11 open hearths; Corrigan, McKinney Steel Co. 13, and Otis Steel Co. 7. Each company has one unit out for repairs. At Lorain, O., a repaired furnace was lighted, but another was promptly taken off for repairs.

Youngstown

Steel output held steady after dropping from 67 per cent last week to 65.5 early this week. Fifty-five of 83 open hearths are melting. The Pennsylvania coal strike, which has closed mines of Youngstown Sheet & Tube Co. and Republic Steel Corp., has had no effect here yet. Plants have a fair stock of fuel. Output this week is expected to hold near the present level.

Buffalo

Buffalo district steelworks are scheduled for a 2 point increase in production this week, a 59 per cent rate being anticipated compared with 57 per cent last week, which was adjusted after the report to STEEL was computed. Adjustment of operative units is responsible for the gain. Maintenance of the present rate is foreseen during the first half of this month, although there has been a slowing up of insistent demand for some lines which were active in early July.

Birmingham

Steel operations here have eased off from 77 per cent to 55, due to a slackening in the rail mill at Ensley. Tennessee Coal, Iron & Railroad Co. has 8 open hearths on at Fairfield and the Gulf States Steel Co. 5 at Gadsden.

Canada

Blowing in of one blast furnace stack each at Port Colborne, Ont., and Sydney, N. S., the former with a daily capacity of 350 tons and the latter 550 tons, does not indicate further large orders but rather the deflation of stocks during the shutdowns. The Dominion Steel & Coal Corp. has increased the working force at its Sydney steelworks to 1700 men, of whom 1500 were put on for the 50,000-ton rail order of the Canadian National Railways.

Wheeling

Steelmaking continued unchanged in this district through last week at 80 per cent. Twenty-eight open hearths of 37 were operating through most of the week in the plants of two leading producers in the district.

New England

The steel rate here for the week ended Aug. 5 was at 76 per cent, and will show little change this week, as repairs at two works continue. Nine open hearths in this district are on.

Operating Rate of the Steel Industry, by Weeks

All figures except monthly open-hearth and bessemer totals of American Iron and Steel institute are percentages, based on reports from Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Buffalo, Wheeling, New England, St. Louis, Lorain, Detroit districts. Weeks end Saturday. STEEL's weekly estimates take into account only actual available capacity, which is less than Institute's total.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	STEEL's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.	22	25	26	27	28.5	25.7	1,484,991	26.41
Feb.	28.5	27	25	25	....	26.4	1,481,253	27.40
March	25	25.5	24.5	23	....	24.5	1,433,337	24.55
April	23	22	22	23	24	22.8	1,259,629	22.40
May	24	24	25.5	23	....	24.1	1,125,243	20.01
June	21	17	17	17	....	18.0	912,757	16.23
July	14.5	12	15.5	16.5	16.5	15.0	806,722	14.92
Aug.	14.5	14.5	15.5	14.5	....	14.7	846,730	14.50
Sept.	13.5	15.5	15	17	....	15.3	991,858	17.64
Oct.	18	19	19.5	19.5	19.5	19.1	1,087,058	19.33
Nov.	21	21	19	17.5	....	19.6	1,032,221	18.36
Dec.	16	15	14	12	13	14.0	861,034	15.31
1933								
Jan.	15.5	17	18	19	....	17.4	1,030,075	18.23
Feb.	19	19	19	17	....	18.5	1,086,867	20.83
March	15	13.5	15	14	15.5	14.6	909,886	15.50
April	17.5	20.5	25	29	....	23.0	1,362,856	25.08
May	33	36	40	43	....	38.0	2,001,991	34.11
June	47	48	49	51	54	49.8	2,597,517	45.96
July	55	57	57	55	....	55.8	.....	.....
August	54	..	..	..	....	....	.....	.....

Financial News of Steel Industry

FINANCIAL reports for National Steel Corp., American Rolling Mill Co. and Follansbee Bros. Co. for the second quarter supplement those given in last week's STEEL and complete the showing for 15 large integrated producers having a combined annual steel ingot capacity of 59,509,000 tons, or 89 per cent of the total average.

During the second quarter these companies experienced an aggregate net loss, after charges, of $14,634,583, compared with net loss of $34,744,202 in the first quarter and $36,223,430 in the second quarter of 1932. The showing of these same companies for the first half of 1933 was a net loss of $49,646,210, compared with a deficit of $63,556,448 in the first half of 1932.

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Follansbee Bros. Co., Pittsburgh, reports net loss of $346,642 for the first half of 1933, contrasted with a loss of $616,096 in the first half of 1932.

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American Steel Foundries, Chicago, encountered net loss of $907,072 in the first half, after charges, compared with deficit of $636,873 in the corresponding period of 1932.

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Colorado Fuel & Iron Co., Denver and Pueblo, Colo., failed to meet interest due Aug. 1 on bonds, and following court action, Arthur Roeder, president, has been appointed receiver. A protective committee of bondholders has been organized.

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Allegheny Steel Co., Brackenridge, Pa., reports net profit of $224,422 in the second quarter, after charges and preferred dividend, compared with net loss of $131,937 in the first quarter of 1933 and net loss of $170,786 in the second quarter of 1932.

□ □ □

American Rolling Mill Co., Middletown, O., made a net profit of $307,268, after all charges, in the second quarter, compared with loss of $966,593 in the first quarter and loss of $389,312 in the June quarter of last year. For six months of 1933 the net loss is $659,325, against $961,229 a year ago.

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National Steel Corp., Pittsburgh, increased its profit six times in the second quarter, rising from $280,844 in the first quarter to $1,532,466 in the second quarter. For the six months ended June 30 the corporation's net profit was $1,813,311, compared with $1,153,799 a year ago.

WINDOWS OF WASHINGTON

Labor Out, Hearing Deflated

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Burgess Mars Perkins' Visit

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NRA Program a Large Order

WASHINGTON

WHAT was billed as the industrial drama of the century—a triangle in which iron and steel, organized labor and the open shop were to clash during the NRA hearing on the steel code—fizzled out to an innocuous one-act skit here last Monday.

But without loss of honor to iron and steel. On the contrary, with the preservation of tempers on all sides, the avoidance of an open conflict which no one, least of all NRA, desired, and an unaltered attitude by the industry to maintain the open shop although talk less about it.

Withdrawal of the open shop provision of the code, by prearrangement as it afterward developed, completely deflated the hearing. Expected by almost everyone to draw out the greater part of a week and to bring the matter of unionization to a head, the hearing subsided into a colorless one-day affair.

The first reaction, which daily newspapers broadcast, was that iron and steel has surrendered on this vital point—a viewpoint which the industry was at no pains to correct, but sober second thought was that the industry had done the smart thing by localizing the issue.

But to tell the story chronologically—

PRACTICALLY every iron and steel executive, a number of workers whose clothes were their badges, and a liberal sprinkling of women rolled up an attendance of almost 500 in the department of commerce auditorium.

On the rostrum were Chief Administrator Johnson, Chief Counsel Richberg and Deputy Administrator Simpson, who presided, flanked appropriately enough on the left by outstanding leaders of labor and on the right by members of the industrial and consumers' boards.

General Johnson lauded the industry for its co-operation, Mr. Richberg explained procedure, Robert P. Lamont, president of the American Iron and Steel institute, began reading his prepared statement when it was discovered that Secretary of Labor Perkins had not arrived.

So a woman held up for 10 minutes the start of what was scheduled to be the most important meeting yet of NRA.

In 5000 words and 40 minutes Mr. Lamont stated steel's position. Rather dryly, General Johnson observed that the open shop provisions were inappropriate, Mr. Lamont conceded that he had anticipated such an attitude and asked 10 minutes for a meeting with directors of the institute. Back came Mr. Lamont with a prepared statement yielding on this point, and the crucial issue was past.

Armageddon had been transferred from a titanic conflict at Washington to localized contests at every plant where organized labor attempts to gain a foothold. Subsequent presentations on the code, especially those of Secretary Perkins and William Green, president of the American Federation of Labor, were able and important, but the stinger had been pulled out.

BEHIND its enthusiasm for the blanket code and its efforts to promote acceptance of it, NRA is experiencing considerable apprehension over the economic situation.

Increasingly it is being learned that General Johnson can be taken at his word and that his forecasts are accurate. Right now the country appears to be in the critical period to which General Johnson has been pointing for some weeks. He has been saying that NRA must be in full swing by Labor day, or else—

The "buy now" campaign is a frank admission that for many merchants and small industries the gap between increased costs, due to higher wage rates and shorter hours, and increased return due to stimulated purchasing power, must be bridged artificially.

Labor, constantly fed by statements of its importance, has developed so alarming a tendency to get out of hand that the cotton textile code is being amended to provide for an industrial relations board of three—one each representing industry, labor and NRA—and steel and all other codes will contain similar machinery.

Reports are reaching Washington that minimum wage rates are coming to be regarded as exactly that, and demands for further increases will speedily follow organization of labor.

NRA has foreseen that August usually is the nadir of summer activity and has been apprehensive that production in June and July having forged ahead so fast, even a normal reaction this month would have a sinister meaning. To see steel production slipping about a point a week is not reassuring.

Always in the background are the President's powers for inflation. Thus far it is regarded that whatever inflation has developed has been credit rather than currency. Should the business situation ease off badly, inflation will be rushed to the rescue, with devaluation of the dollar usually expected to be the first remedy.

ONLY those who have had close contact recently with NRA can fully appreciate the task of Deputy Administrator Simpson in taking the steel code aside "for analysis and study."

NRA and the agricultural adjustment administration are the two places in Washington where the principles and precepts of the recovery legislation are least observed. Executives count 16 hours a normal day,

and Saturday and Sunday are just two more days in the week.

It is not detrimental to General Johnson to say that NRA is getting away from him. Already 680 sepate codes have been submitted to him, and the task of keeping track only of major codes has become a superhuman one.

With individual codes one matter, the blanket code another, and a campaign to "buy now" getting under way, NRA is becoming a three-ring circus. There is even divided opinion whether the bird on NRA emblems is a hawk or an eagle; General Johnson usually refers to it as an eagle. But hawk or eagle, it is an improvement on its kind, as it has knees —something hitherto unheard of in the bird kingdom.

No one is more forward in stating that the campaign to enforce the blanket code is purely one of sentimental pressure. The entire effort is to build up public opinion; the flat statement has been made that no court action will be taken. It will be as unpopular to be anti-NRA as it was to be pro-German during the war, if the campaign succeeds.

There is, however, a limit even to public opinion. Thus far the public utilities have not been as enthusiastic as General Johnson would like them to be, but he concedes there is no way to boycott them—to favor another telephone or gas company where there are monopolies.

No Labor Pact Superseded

Likewise, NRA has no jurisdiction over the railroads, and secondly, so far as the railroads are concerned, the labor agreements between the roads and the brotherhoods and unions override the NRA regulations. In fact, no labor agreement is to be superseded.

Carried to its logical conclusion, the child labor provision of NIRA would take every small newsboy in the United States off his route and post, but General Johnson believes this would be going to extremes.

An increasing number of complaints is coming to Washington of employes dismissed for joining unions, but General Johnson recognizes that chronic troublemakers are first to object. He promises, however, "to take very prompt action" in authenticated cases.

General Johnson continues single-minded to a noteworthy extent in pushing his program. He sees the index of production as far above the index of employment as it was in 1929. Whatever the load upon industry to expand employment now, failure will bring a worse consequence, he warns.

IT WAS a lucky break for the steel industry that the score of newspaper reporters trailing Secretary Perkins through the Homestead works of the Carnegie Steel Co. a week ago Friday had adjourned to a drugstore for the pause that refreshes at the time Miss Perkins opened a forum for labor in the Homestead borough hall.

The biggest story of the day "broke" then, a story that would have been featured in almost every newspaper of the land, but since it was not disclosed until Miss Perkins returned to Washington the edge was off of it.

As Miss Perkins tells it, she had wired to Burgess Cavanaugh for the use of the hall after her inspection trip. While getting labor's opinions of the steel code and unions, the representative of a news service which for some reason had incurred the displeasure of the burgess sent in word that he was being barred. Going to the door of the hall and calling him, Miss Perkins got him past the police guard.

"A Very Nervous Man"

A few minutes later a messenger delivered a telegram from an organizer for the steel and metal workers' industrial union, stating that he and his followers also had been denied admittance. Again Miss Perkins went outside, and finding that the burgess—"a very nervous man," as Miss Perkins describes him—would not admit these radicals, she proposed adjourning the meeting to a public park.

Again the burgess declared that not even in a public park would the union leader and his followers be permitted to meet with her, so Miss Perkins adjourned to the postoffice—federal property—and there heard demands similar to those made at Washington last Monday by the union. These demands included a $20 weekly minimum, a 5-day, 6-hour week, cancellation of all debts owing the steel companies, and so on.

Burgess Cavanaugh, according to Miss Perkins, was not an employe of the Carnegie company, and the incident was "purely an individual reaction of the burgess." From Carnegie officials, she said, she had received every courtesy, as was the case the following day at the Sparrows Point, Md., plant of the Bethlehem Steel Co.

At Homestead and Sparrows Point she found working conditions good, especially commenting on the good lighting, good comfort facilities and cooling apparatus at Sparrows Point, which she described as a "very fine, modern steel plant." Concerning the employe representation plan of the Carnegie company, she got little reaction at Homestead because the plan is new; the Bethlehem plan she found 10 to 15 years old and apparently working satisfactorily so far as bettering plant conditions is concerned.

A company plan, according to Miss Perkins, is as good or as bad as the officials at local plants, but is not a substitute for a labor union.

THE billion dollar mark was passed by the public works administration Aug. 1, when Secretary of the Interior Ickes, who is also administrator, announced that allocations had reached $1,023,966,201. In other words, nearly one-third of the public works fund has been allocated in six weeks.

The billion dollars allocated thus far has been almost entirely for federal projects, selected because they provided work at once for large numbers of men. Included in this sum are $400,000,000 for public roads, $50,000,000 for roads and trails on Indian reservations and other public lands, $25,000,000 for subsistence homesteads, $100,000,000 for the farm credit administration, $238,000,000 for naval construction, $50,000,000 for the Tennessee Valley authority, $20,000,000 for civilian conservation corps, $20,000,000 for the purchase of land, $63,000,000 for the Grand Coulee dam project, $15,000,000 for the forest service of the department of agriculture, $2,600,000 for the coast and geodetic survey of the department of commerce and $2,500,000 for the geological survey.

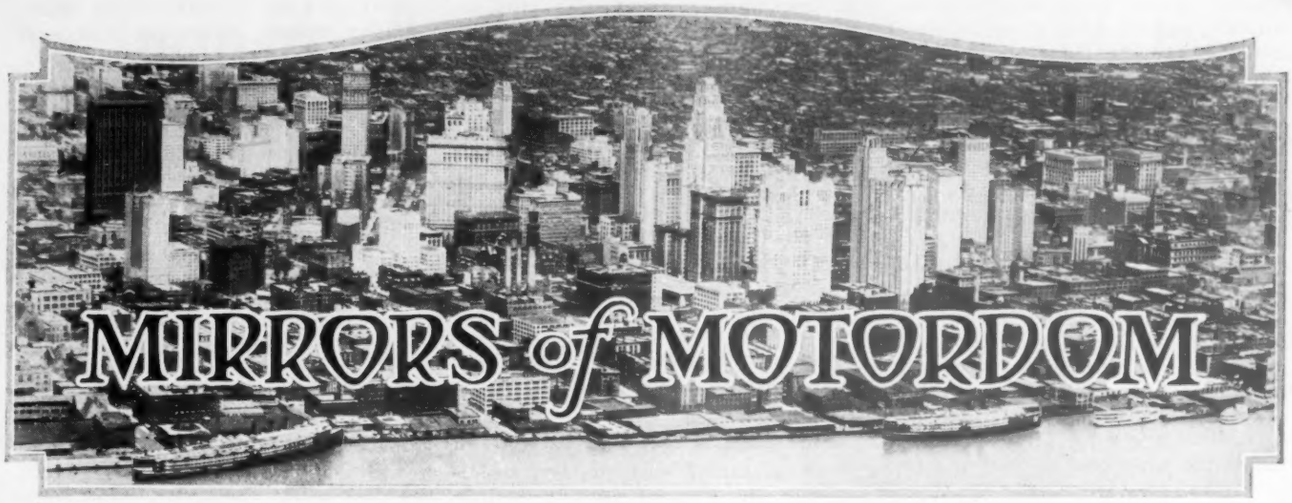
The navy department brushed aside charges of collusion in bidding and on Aug. 3 awarded 34 steel naval vessels on which bids were opened July 26. Some 80,000 tons of plates, shapes and bars are required.

Indians Pass Up $30,000

In contrast to the jockeying of most states and government agencies for part of the public works appropriation, representatives of the Menominee Indian reservation in Wisconsin came to Washington recently to report that a tribal council had been held and the Indians had voted unanimously to use their own funds for building roads, and hence would relinquish the $30,000 available to them for that purpose.

Secretary Ickes is shooting at a new low mark for administrative costs and overhead in connection with the public works program. Governments of states are being asked to furnish quarters free for state advisory boards. These three members of the state boards are to be paid $10 a day, and only for the days they are actually engaged in public works administration tasks. The $5 per diem subsistence charge allowed by the government is the maximum that will be permitted to state advisers.

Thus far it has cost the government $130,000 to run the General Johnson portion of NRA, which was set up June 16, and $100,000 for the public works administration.



August Is Bowing to Season

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Codes Perplex Body Makers

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Ford Rules Against Vacation

DETROIT

THE bloom is not yet off the rose so far as demand for new automobiles goes. Midsummer finds Detroit fully convinced that August is about to show some decline in automobile production, but the drop will not be a large one. Production holds geared in tight mesh with actual retail demand.

An easing in activity here is something to which the industry can easily reconcile itself. July output was well over 200,000 units. August may slip below 200,000 assemblies, but recent months all have bettered the original expectation. One authority estimates August at 170,000 to 180,000 cars.

In past years this month has been the great vacation period in Detroit. Ford always took a two, three or four-week shutdown that was usually concluded with Labor day. Many General Motors units did the same, as did the smaller independents. Buick used to prepare for changing its model by closing most of the month at Flint. Chrysler invariably took some time off in August when calculating schedules.

But August this year—while it begins to show an easing in assembly rates—follows closer to continuous operation in the motor plants. Fewer cars may come from the lines, fewer hours and days of work may prevail, and withal a smaller tonnage of steel may be shipped to the district this month, but the "plant closed" sign won't be hanging for several weeks on end outside of important plants.

MOST significant is the decision, not likely to be reversed, that Ford arrived at last week. Ford a while ago had planned a vacation affecting all of the Fordson plant, which would begin Aug. 11 and continue through Labor day, Sept. 4. Later the closing date was moved up to Aug. 18, shortening the proposal to a two-week holiday. But now it has been decided not to close the plant at all.

The Ford situation thus clarifies into a 50,000-car month. Chevrolet anticipates a 20 per cent decline in planning to make 65,000 jobs after close to 80,000 in July. Plymouth, which ran through July at over a 30,000-unit clip, has planned an exact duplication for August.

The total of the "big three" is 145,000 to 150,000 cars. Rates are of course subject to constant revision, and thus far all revision has been upward.

Chrysler recently decided to build 45,000 models this month, a figure built up from a base of 30,000 for Plymouth, plus Dodge, DeSoto and Chrysler itself. In step with a further slowing anticipated by the industry for September, Chrysler preliminarily scheduled 14,000 jobs for next month.

However, it is entirely possible and still a matter of indecision by Chrysler executives that the 14,000 may be thrown over in total or part for manufacture in August. The Chrysler organization apparently is not yet certain of when it will retool.

Buick may be among the first model changers this season. Steel and parts have definitely been released for the last run on the 1933 models. Approximately 3000 more will be assembled, although this may take it into early September. Plans and specifications have not been released to material suppliers for the 1934 model, but a steel buy covering the first jobs of the new series is imminent.

Ship Sheets So Hot Cars And Trucks Are Blistered

CERTAIN users of sheets in Detroit aren't waiting these days until the rolled sheet is cool before they are taking the stock and putting it in presses or other forming operations.

The story is told of two important consumers of sheets that have been so insistent for steel they are requesting delivery of sheets direct from the rolls of a Detroit mill without waiting for the cooling process.

In one case, the hot sheets blistered the paint off several railroad cars. Truck shippers in being asked to meet this unusual delivery requirement have had several close calls in and around Detroit when their trucks almost caught fire from their load.

AUTOMOBILE industry recently filed its code required by NRA through its trade association, the national automobile chamber of commerce. The motor code is not drawn up in as much detail as the steel code and excludes definitions on certain important functions of its industry which other codes will cover.

The matters of unfair competition, selling practices and prices are excluded from the motor code. These points are left the automobile dealer group, which will file a separate code.

Among problems which have arisen is the dilemma affecting automobile body builders, principally the independents in this field. They have been on the fence to know whether to ally themselves with the automobile industry, the pressed metal industry, or other possible alternatives.

A serious problem is before such manufacturers as Briggs, Budd Wheel, Murray, Heintz, Mullins and

others. If they enter under the automobile code they bind themselves to the 43-cent per hour minimum of labor provided for, also the minimum working hour provisions. Yet, if one of their number decides to enter under the pressed metal code different labor provisions prevail.

In such a competitive field, where body work is sharply bid for and body contracts rarely run for more than a year, costs are a strong consideration. A body contract is frequently taken on a small margin of profit. Labor costs can easily turn profit into loss. Fisher Body, through its parent General Motors, has been drawn in whether it likes it or not to observe the rules of the automobile industry's code.

SPEAKING of body builders, the past few years have wrought distinct changes in their functions. Time was when the body plant in Detroit could easily be booked up on contract automobile work. The depression drove these interests to other stamping fields. Some have turned out so lucrative that to return to body building carried little incentive.

Briggs turned to ice boxes, Budd to railway cars, Mullins to washing machines, Murray to steel beer barrels. Murray is now using over 1000 tons of sheets weekly in making this one product alone.

Last week Murray announced a new type of steel barrel, the quarter barrel, which is companion to the insulated steel half barrel first placed on the market by it in April. More than 250,000 of the half barrels have been sold since, and production is at a 5000-barrel per day clip. More than 800 are employed in this stamping department alone in the Detroit city plant of Murray.

The quarter barrel is to be stamped of two half sections of pressed steel welded together. Over this is an insulating material, then a thick sheet of heavy-gage steel. The steel is to be treated with bonderite to prevent rust.

Chrysler's second quarter showing was obviously a result of Plymouth sales but Dodge, according to opinion, stole second place from DeSoto as a money maker. . . . .Chrysler's total sales for the quarter were over $100,000,000. . . . . Reo in raising wages Aug. 1, announced 2000 employes were thereby restored to the same wage rate as the plant paid in 1929. . . . . Practically all of the motor plants in Detroit raised wages Aug. 1, the extent of the advance being 15 per cent generally. Aside from General Motors units, Packard, Hudson, Chrysler and Graham Paige made advances under the NRA blanket code. . . .Assessments on stockholders of the defunct Detroit banks were posted in Detroit last week. Edsel B. Ford, holding 55,020 shares in the Guardian group, was listed as the largest shareholder in that bank system. The shares carry $356,729 assessment.

Died:

CHARLES E. FINKL, 60, general manager, A. Finkl & Sons Co., at Chicago, July 29. For about 40 years and up to the time of his death, he was the active head of the A. Finkl & Sons Co., with which he had been associated his entire business life.

□ □ □

Al Michaels, 65, for the past 20 years identified with the Hyman-Michaels Co., Chicago, dealer in iron and steel scrap, and brother of Joseph Michaels, president of that company, unexpectedly at his home in Chicago, July 29. Burial was held July 31. Mr. Michaels was born in Cincinnati and with the exception of about one year spent in Pittsburgh, was located in Chicago throughout his business career. He was one of the best known members of the iron and steel scrap industry as well as being well acquainted in the steel industry itself.

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Alva J. Gillis, 45, president, Gillis Auto Parts Co., Troy, O., July 28.

□ □ □

Max Seffren, 72, president, the Max Seffren Supply Co., Chicago, July 24.

□ □ □

George E. Gooding, 82, former vice president of John R. Roberts & Co., Boston, July 19, at Saugus, Mass.

□ □ □

Saul Levine, 51, former engineer at Pittsburgh for the General Electric Co., Schenectady, N. Y., at Conneaut, O., recently. He was a graduate of Syracuse university and a member of the Engineers club, Pittsburgh.

□ □ □

Arthur L. Moore, 79, founder of the Springfield Drop Forging Co., Springfield, Mass., later reorganized as the Moore Drop Forging Co., at Huntington, Mass., July 23. He retired in 1914.

□ □ □

John T. Stoney, 71, former president, Stoney Foundry Engineering & Equipment Co., Cleveland, July 28. Before organizing his company, from which he retired recently, he was associated with the Westinghouse Machine Co., Trafford City, Pa., and the Ferro Machine & Foundry Co., Cleveland.

□ □ □

Adolph N. Miller, 70, president, A. N. Miller Co., Milwaukee, manufacturing special machinery and tools, July 30. He was born in Washington county, Wisconsin, and went to Milwaukee in 1890, shortly afterward becoming connected with the National Brake & Electric Co. In 1907 he perfected what is considered the first successful gasoline locomotive, a design still being manufactured by Westinghouse. Mr. Miller established his own shop in 1908.

□ □ □

William F. Sellers, 77, long identified with the tank and boiler industry, at Wilmington, Del., recently. A graduate of the University of Pennsylvania in 1876, in that year he entered the employ of the Edge Moor Iron Co., Edge Moor, Del., which was founded by his father, William Sellers, who also founded William Sellers & Co., Philadelphia. Advancing through various posts, Mr. Sellers became president in 1905. Due to poor health he relinquished some work in 1928 but continued to serve as president until last Jan. 31 when he was succeeded by Ely C. Hutchinson.

Report Detroit Backs Iron And Steel Plant in B. C.

Detroit interests are behind negotiations for construction of a blast furnace plant in British Columbia, to be followed later by steelmaking capacity, according to S. F. Tolmie, premier, Toronto, Ont. The plant probably would be established near Campbell river on Vancouver island, where extensive water power is available. Magnetite ore would be brought from Texada island and from mines on the mainland.

The provincial government of British Columbia has repeatedly tried to enlist interest in an iron and steel project. Legislation recently amended provides that the province may pay a bonus of $3 a ton on pig iron manufactured in British Columbia from British Columbia ore and $1.50 on iron made from ore mined outside the province.

Colorado Nail Department Marks 30th Anniversary

Wire nail department of the Colorado Fuel & Iron Co., Pueblo, Colo., celebrated its thirtieth anniversary July 23.

Prior to the opening of this department on July 23, 1903, nails from wire stock had been made in California, but at that time the Minnequa products were the only wire nails being made west of the Mississippi.

On the opening day 200 men, many having had expert training at the American Steel & Wire Co. mill at Joliet, Ill., were employed, according to *The Blast*, of the Colorado company.

The mill now produces 3500 different specifications.

Industrial Men in the Day's News

W. F. Kurfess, Assistant Vice President, Joseph T. Ryerson & Son Inc.

GRADUATED from an engineering school, he has become successful as a merchandising executive.

EXPERIENCE at Annapolis qualified him as a naval lieutenant during the World war.

MANY positions of responsibility with a leading steel warehouse interest led to his recent promotion.

W. F. KURFESS, who recently was appointed assistant vice president, Joseph T. Ryerson & Son Inc., Chicago, advanced to his present position through the structural engineering department of that well-known warehouse firm.

Entering the department in 1912, today he is considered by the firm as one of the most experienced and best informed merchandising executives active in the steel business.

Mr. Kurfess' rise is typical of that of many young Americans, who with engineering training at college took active parts in World war service, came through safely, and then began their life work in industrial pursuits.

He had attended the United States naval academy at Annapolis, Md., and at the beginning of the war he was a member of the first officers' training class at the academy. Later he was a lieutenant aboard the PORTER in active destroyer duty off England and France.

Returning to the Ryerson company at Chicago after his war service, he was promoted to various positions of responsibility. He was manager of its mill department at the time he was appointed assistant vice president.

Mr. Kurfess is a member of the University Club of Chicago. He is married and has two sons.

JAMES E. LOSE, since 1930 general superintendent of the Homestead steelworks of Carnegie Steel Co., Pittsburgh, has been appointed operating vice president of the Carnegie company, succeeding Ralph H. Watson, who as noted in STEEL for July 31 was recently appointed operating vice president for all subsidiaries of the United States Steel Corp.

Mr. Lose began his career with Carnegie in 1910 with the Carrie furnace division. He later became superintendent of blast furnaces, following which he was named assistant general superintendent of Homestead in 1928. He became general superintendent there Oct. 1, 1930.

Malcolm F. McConnell, who has been general superintendent at the Mingo Junction, O., works of the Carnegie company, succeeds Mr. Lose as general superintendent at Homestead. He entered the steel industry with the National Steel Co., Sharon, Pa., in 1900 and was later employed as a draftsman with LaBelle Iron Works, Steubenville, O. However, he returned to Carnegie in 1905 and has been identified with that company since.

Robert S. Quinn, assistant to Mr. McConnell at Mingo Junction, has been appointed to the post of general superintendent at the works, succeeding the latter. In turn, Hugh B. Conover, formerly master mechanic at the Mingo Junction division, is now appointed to the assistant general superintendency there, succeeding Mr. Quinn.

□ □ □

Robert A. Wilson, consulting engineer, Dallas, Tex., has been elected president and general manager, Kibele Mfg. Co., San Antonio, Tex., manufacturer of oil field equipment, through purchase of a substantial interest in the company.

Mr. Wilson was formerly works manager for Guiberson Corp., Dallas, Tex., and had previously been connected with Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., International Steam Pump Co., Buffalo, and Carnegie Steel Co. at Youngstown, O.

Eric G. Schroeder, vice president, has been handling the company's affairs since the death of Eugene Kibele, its founder, in 1928, and will continue in that capacity.

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Penrose R. Hoopes, consulting mechanical engineer, Hartford, Conn., has been retained as the technical consultant by the Selas Co., Philadelphia, which recently expanded its business to include the design and construction of special automatic machinery for all types of industrial heating processes.

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Roy R. Gill, formerly vice president of the Hollister-Mason Hardware Co., Spokane, has been elected vice president of the Morrison-Knudsen Co., contractor, of Boise, Idaho. Mr. Gill

(Please turn to Page 62)

EDITORIAL

Will Industry Profit From Lesson of Code Hearing?

AS THIS is being written, the staff of N.R.A. is studying the code of fair competition submitted by the iron and steel industry and reviewing the arguments presented and the briefs filed in connection with the public hearing held last Monday.

General Johnson and his aides probably will focus most of their attention upon three points—hours per week, minimum wages and representation of labor, consumers and the public to function in an advisory capacity with the board of directors of the code. If agreement on these questions can be reached, perhaps the other provisions of the code, dealing with basing points, marketing practice, etc. will be accepted substantially as submitted.

That N.R.A. is not confronted at this time with the highly controversial problem of labor relations is due to an arrangement, agreed upon in advance of last Monday's hearing, whereby the industry would withdraw Section 2 of Article IV (statement of industry's belief in the principle of the open shop) and Schedule C (outline of employe representation plan). In withdrawing these portions of the code, Mr. Lamont stated, "It should be distinctly understood that omission of the section does not imply any change of attitude of the industry on the parts therein referred to." Later, when cautioning William Green against arguments on this point, Counsel Donald Richberg said, "How one party may wish to interpret that (provisions on labor relations) in the future, or how another party may interpret it, is a question which may arise to plague us, but at least *it is not before us now.*"

Withdrawal of Open Shop Section Removes Issue from Consideration in Hearings

This points to the real significance of the withdrawal of the section. Its omission simply means that the issue is divorced from the hearings and from N.R.A.'s consideration of the acceptability of the code. Contrary to the scare-head announcements in most newspapers to the effect that union labor had won a "great victory," the fact is that no battle was fought. N.R.A. and the steel industry, by agreement, removed the issue from the Washington arena and thereby postponed the decision to another time and place.

The public hearing, aside from being a unique event in the history of the steel industry, was of far less importance than had been anticipated. It is doubtful whether anything of significant character was developed during the two sessions which was not already known to all interested parties. The event was in reality a formality—"window dressing" for negotiations which are being carried on behind the scenes.

Notwithstanding this, the hearing abounded with interesting, and perhaps symbolic, incidents. For the first time in history, a secretary of labor outlined to the executives of a great, basic industry a broad, comprehensive plan for improving the condition of its employes. Insofar as Madame Secretary Perkins pointed out the direction for impovement, her views are shared by the majority of progressive executives in the iron and steel industry. The goal to which she pointed can well be adopted by the industry as an objective in long term planning. However, it is too sweeping in character to be put into effect during the life of the recovery act.

Steel Industry Should Begin Real Campaign To Improve Labor Relations

The code presented by William Green was nothing more or less than union labor's standard counter proposal to all codes which are submitted by industry. Likewise, the parade of union representatives, which continued throughout most of the afternoon, was union labor's traditional method of dramatizing its argument and of creating an impression for public consumption that industry is heartless, corrupt and oppressive in dealing with labor.

From the confusing array of impressions arising from the experience of this hearing, one thought stands uppermost. It is this: The iron and steel industry, while having made distinct progress in recent years in improving the status of its relations with labor, should undertake now, without further delay, to develop contacts with its workmen so wholesome and so satisfactory to employer and employe that the danger of periodic sniping by selfish outside interests will be eliminated for once and for all.

If the iron and steel industry will start now to tackle the problem of labor relations with the same determination and ability which 20 years ago it addressed to the problem of industrial safety, it will be rewarded in later years by insurance against public attacks, a greater measure of employe loyalty and a decrease in the cost and inconvenience of periodic strikes.

THE BUSINESS TREND

N.R.A. and Strikes Are New Factors in Business Trend

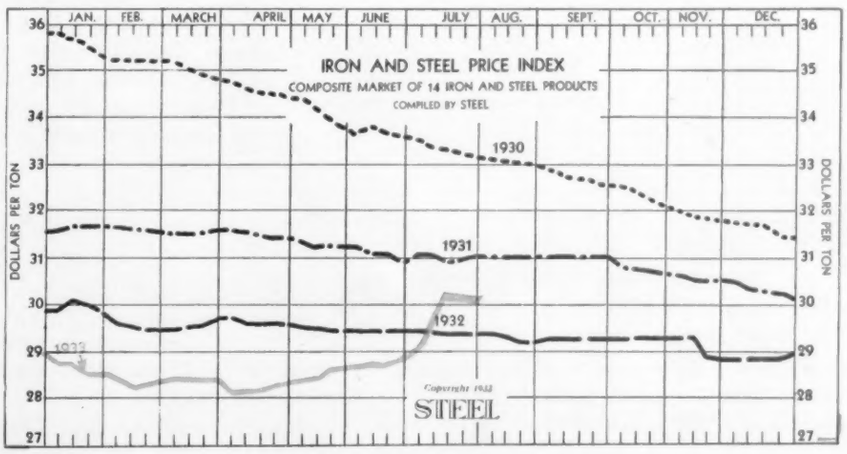
BUSINESS is displaying strong resistance to the seasonal slackening of pace, signs of which have appeared during the past few weeks. Recession in the steelworks operating rate has been of almost negligible proportions. Electric power output in the week ending July 29 was slightly in excess of that of the preceding week, but the margin over the corresponding 1932 week was 15.4 per cent—unchanged from the week ending July 22. Freight car loadings for the week ending July 22 totaled 648,914, the highest of any week this year. However, preliminary reports from leading carriers indicate that the total for the week ending July 29 may be down slightly.

These and other indicators point to a moderate deceleration, which may not attain the status of a well defined mid-summer slump. New factors, which may affect the trend of business, are being injected into the situation. Strike troubles, which have multiplied rapidly during the past two weeks, are on the point of retarding the flow of several materials and commodities—notably fuel. Also, the action of hundreds of thousands of employers in changing hours and wages to conform to the blanket code of N.R.A., introduces a broader distribution of wages and a considerable increase in the cost of goods and services.

Opinion as to the probable effect of N.R.A. differs sharply. Many authorities believe that it can succeed only if it is stimulated periodically by shots-in-the-arm by the government. Concern is expressed in some quarters that if N.R.A. seems to fall short of expectations, the inflationists will demand that their brand of medicine be given a trial.

Small Companies, Deprived of Credit Facilities, Are Worried over Increased Costs of N.R.A.

In fact, the two problems now puzzling business and industry are, first, what will be the future of the dollar, and secondly, how can a company lacking adequate cash reserves underwrite its share of the N.R.A. burden unless normal credit is made available?



1933

July 29	$30.02
July 22	30.02
July 15	30.13
July 8	29.61

1932

July 30	$29.46
July 23	29.46
July 16	29.46
July 9	29.48

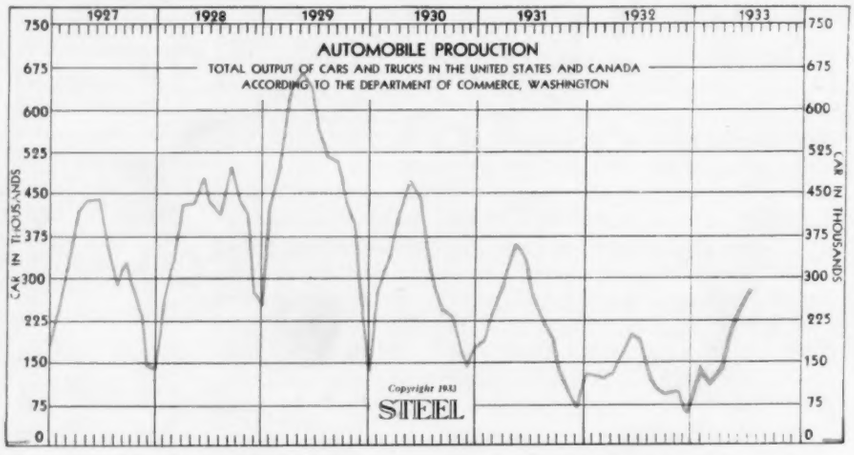
Exports		Imports	
June, 1933	$119,900,000	June, 1933	$122,000,000
May, 1933	114,000,000	May, 1933	107,000,000
June, 1932	114,148,000	June, 1932	110,280,000

June Imports Exceed Exports As Foreign Trade Advances

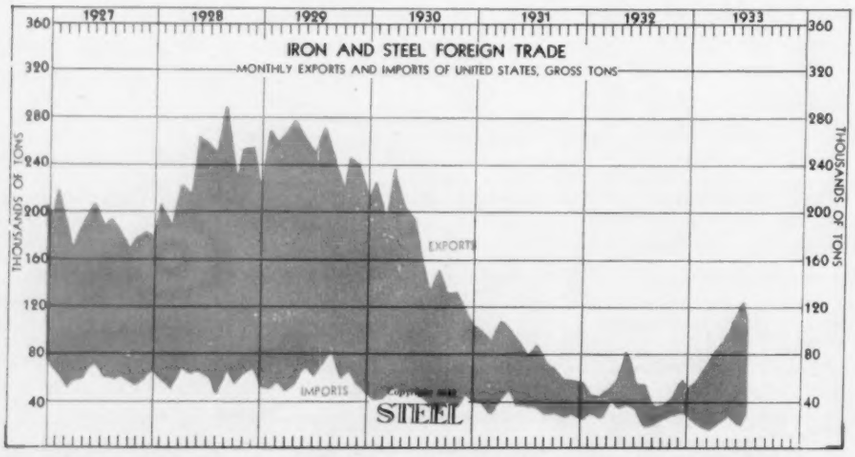
The total value of this country's foreign commerce was again increased in June. The value of merchandise exported in June was estimated at $119,900,000 as compared with $114,148,000 in June, 1932. Imports are provisionally computed at $122,000,000 in June, 1933 as against $110,280,000 in June last year, leaving an unfavorable balance in the merchandise movement for the sixth month of approximately $2,100,000. Cotton shipments were largely responsible for the rise in June exports.

Automobile Output Highest Since May, 1931

Production of passenger cars and commercial motor vehicles in the United States and Canada during June advanced to the highest level for any month since May, 1931. According to the current report from the United States department of commerce, the June output totaled 260,645 units. This is a gain of 32,946 units over the previous month and compares with 190,218 units produced in June last year. Passenger car production in Canada declined nearly 34 per cent in June.



June, 1933	260,645
May, 1933	227,699
June, 1932	190,218



Exports	Tons	Imports	Tons
June, 1933	102,581	June, 1933	34,369
May, 1933	123,069	May, 1933	26,295
June, 1932	52,081	June, 1932	34,494

Steel Exports Decline in June As Scrap Trade Shrinks

Due to a 27 per cent decline in scrap shipments, this country's exports trade in iron and steel products during June failed for the first time this year to register an upward movement. Exports in June totaled 102,581 gross tons compared with 123,069 tons in May and 52,081 tons in June last year. Despite this loss of tonnage, June exports were, except for May, the largest of any month since July, 1931. June imports at 34,369 tons were 30 per cent greater than in May.

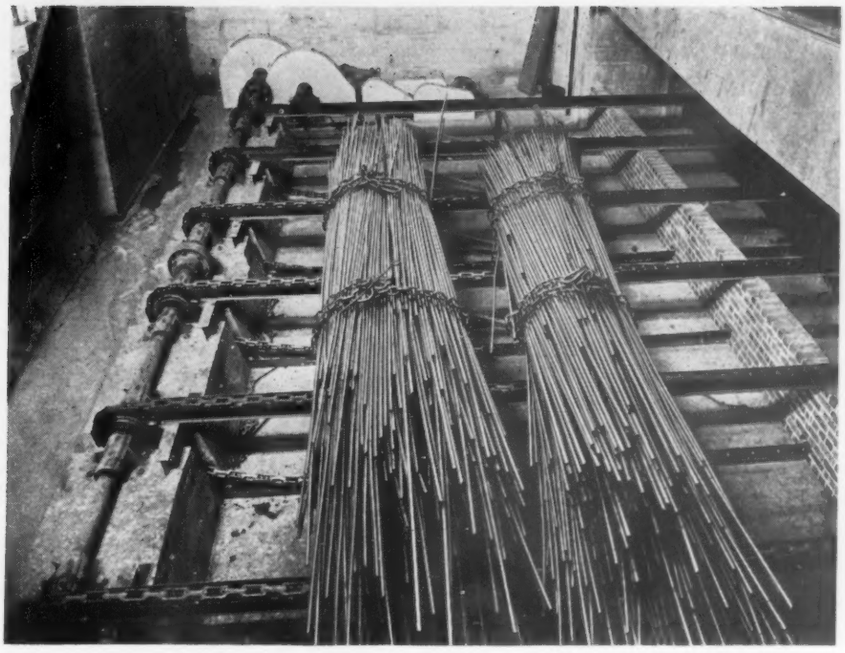


Fig. 1—Discharge end of continuous gas-fired oven for drying the lubricant on seamless tubes preparatory to cold drawing. It handles tubes from 6 to 33 feet long and from ½ to 10 inches diameter

SEAMLESS TUBING FOR COLD DRAWING IS DRIED IN CONTINUOUS OVEN

BY H. M. HEYN
Engineer, Surface Combustion Corp.

TO PRODUCE seamless tubing of small sizes, odd shapes and thin walls, possessing a bright scale-free surface and a high degree of strength and stiffness, the process of cold drawing is employed. Up to this point, the method of manufacture of cold-drawn tubing is the same as for hot-rolled tubing, including the various operations of bloom heating, piercing, rolling, reeling and sizing.

Preparation of tubes for cold drawing consists usually of inspection for surface defects, pointing, pickling, washing, lubricating and drying. As the latter two operations of lubricating and drying are of great importance in successful subsequent operations of cold drawing, this article will deal with the drying process and will describe a modern drying oven installation in the plant of a nationally-known tube manufacturer.

The problem in this case was to design and build a drying oven beneath the mill floor level for the purpose of drying tallow and flour done on ½ to 10-inch diameter tubes measuring in length from 6 to 33 feet. The pit proper is approximately 36 feet wide, 95 feet long, 11 feet deep on one side, and 13 feet deep on the other. The side and end walls and bottom of pit are of reinforced concrete construction. The oven proper, shown in cross-section in Fig. 2, is 36 feet wide and 50 feet long, the mill floor serving as the roof, the underneath side of which is insulated and provided with return air ducts to a fan for the purpose of recirculation. To facilitate drainage of tubes, the oven floor was sloped from one side to the other to carry off excess water and dope.

By constructing the oven beneath the floor level, the bundles of tubes are lowered into a pit at the charging end, Fig. 3, by means of a crane, and taken out at the discharging end, Fig. 1, by the same means. The roof of the oven serves as mill floor and is used as storage space for tubes.

The conveying mechanism consists of seven continuous chains, shown in both Figs. 1 and 3, running through the oven in channel irons supported by suitable steel construction. The conveying chains return through the bottom of the oven in channel iron guides. Chains are on 5-foot centers, thus not permitting tubes of

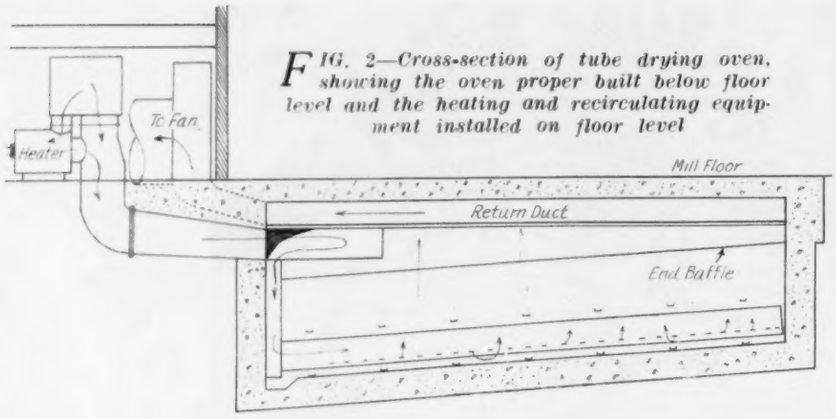


FIG. 2—Cross-section of tube drying oven, showing the oven proper built below floor level and the heating and recirculating equipment installed on floor level

less than 6-foot lengths to be loaded directly on to chains. However, small bundles of short tubes can be piled on top of large bundles so long as there is headroom for the load to pass under the steel baffles at each end of the oven.

The entire conveying mechanism slopes parallel to the oven floor to facilitate drainage of the tubes. Suitable sprockets keyed to a head shaft, which is connected to a variable-speed drive driven by a 3-horsepower, 1200-revolution-per-minute motor, pull the chains and load through the oven, as shown in Fig. 1.

The heating and recirculating equipment, Fig. 4, used for supplying a uniform supply of hot air to the oven is located in a small room off to one side of the oven, but on the mill floor level. The heated air is forced down through ducts to the bottom of the oven, and through cross ducts where it is discharged under the bundles of tubes and allowed to rise through and around the work.

Some of the hot air is drawn back for recirculation through return ducts in the oven roof. Fresh air is drawn through an adjustable butterfly valve on the intake header to the recirculating fan. Air for combustion is furnished by a turbo blower furnished by the Spencer Turbine Co., Hartford, Conn. The recirculating fan is rated at 40,000 cubic feet per minute at 4 inches H_2O static pressure, and was supplied by the B. F. Sturtevant Co. Inc., Boston.

Three Heaters Are Used

As safety and accurate temperature control were of utmost importance on this installation, several unique control and safety devices were used in conjunction with the heating and recirculation equipment. The oven is fired by three direct gas-fired push-through type air heaters and each of these heaters is fired by automatic proportioning burners using natural gas at zero pressure, and air at 1 pound. This equipment was installed by the Surface Combustion Corp., Toledo, O. The outlet of each heater passes into an individual duct which passes down under the floor and into the main feeding headers in the oven.

The fresh air and recirculated products drawn through the recirculating fan are forced into a rectangular duct which connects to each heater by an individual connection, thus permitting a part of the cool mixture of fresh air and recirculated products to pass through the heaters. The mixture that does not pass through the heater is bypassed into other ducts going to the oven. These ducts are equipped with orifice plates between the main header outlet of the recirculating fan and the outlet of the air heater so as to control the volume of the mixture being bypassed around the air heaters.

Control Is Automatic

Oven temperature is controlled automatically by means of a recording controller and an automatic valve. The valve controls the air supply to each air heater burner, which in turn determines the amount of gas being burned. The controller and valve were furnished by the Foxboro Co., Foxboro, Mass.

The safety devices are of such nature that the entire system is protected in case of (1) insufficient air flow through the air heater; (2) failure of gas pressure; (3) failure of combustion air pressure; or (4) failure of the pilot light on the air heaters. In case the large recirculating fan fails, or flow of air through the heater is dangerously low, a vane relay placed in the air heater inlet cuts out the circuit automatically, and closes a solenoid valve in the gas line going to the burner.

How Safety Is Provided

When this happens, the air heater cannot be lighted up until the recirculating fan is started again. In case of failure of gas or combustion air supply, a solenoid valve in the gas supply line shuts off the fuel supply. Two pressurestats, one each in the air and gas lines to each burner, are connected into the circuit to the magnetic solenoid valve so that breaking of contact in the pressurestats will automatically cause the solenoid valve to close. The pilot light to each burner is equipped with an expansion element contactor so that in case of failure the circuit to the magnetic solenoid valve is immediately broken, thus shutting off the gas.

Operation of this oven is most flexible because a number of changes can be made to obtain certain results. For instance, both the recirculating fan and drive have variable speeds. Dampers in the 24-inch cross ducts beneath the conveyor afford an adjustment whereby the volume of hot air being forced into the oven can be varied at any point. As the air heaters are hooked up individually, any combination of the three can be used, depending, of course, upon the amount of material being dried and the speed of the conveyor.

Successful cold drawing of tubing

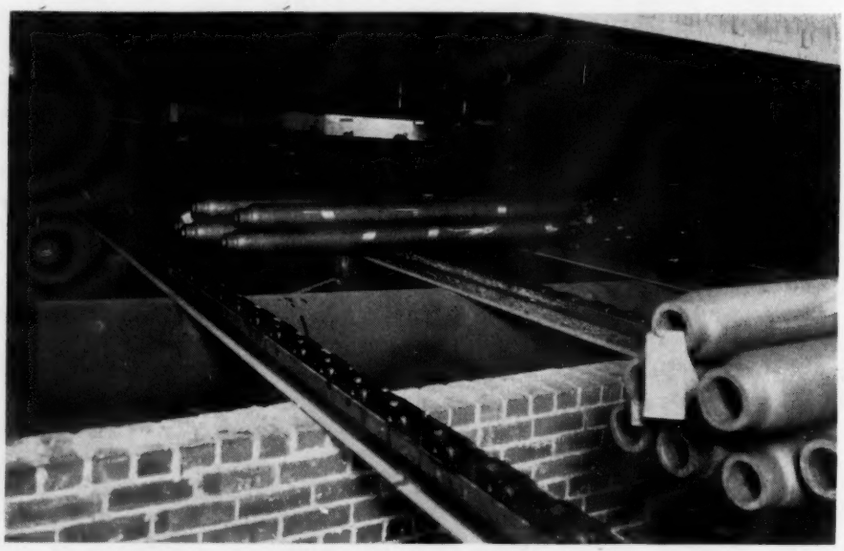


Fig. 3—Charging end of the drying oven. The tubes are lowered into a pit by crane and pulled through the oven on seven continuous chains. Removal from the discharge pit also is performed by crane

depends to a large extent upon the quality of drying done. A tube which is dried thoroughly on the inside as well as the outside will pull satisfactorily on the draw bench, but if the tube is wet in spots or if the dope is charred, die trouble will result, and the tube will be scratched and of non-uniform thickness.

In addition to producing a well dried tube, the oven must be of such design as to handle all sizes of tubing at various rates of production. Small tubing is much more difficult to dry than the larger sizes due to poor drainage, more compact bundles, and small interior area for hot air to pass through. Hence, any industrial oven handling all sizes of tubes should be designed primarily to dry small tubing, as the larger sizes dry much more rapidly.

Installations, wherein gas fired air heaters are used in a continuous oven, such as is described in this article, are producing an improved quality of product economically. Production is uninterrupted, handling costs are reduced, and maintenance is cut to a minimum.

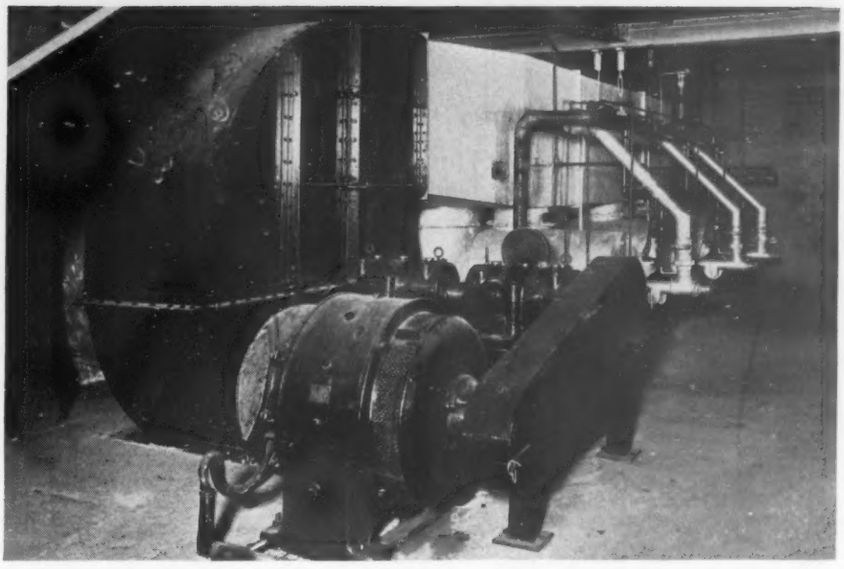


Fig. 4—The heating and recirculating equipment for supplying heated air to the oven. It is located on the mill floor and the air is forced down to the bottom of the oven. The three gas-fired heaters are shown in the right background and the recirculating fan in the left foreground

Papers Listed for Metal Congress

WITH over 100 companies already having reserved 75 per cent of available exhibit space, assurance is had that the fifteenth annual National Metal exposition to be held in Convention Hall, Detroit, Oct. 2-6, will be the largest since 1929, according to W. H. Eisenman, secretary, American Society for Steel Treating, which organization sponsors the annual exposition.

Thirty technical papers have been placed tentatively on the program of the A. S. S. T. for the National Metal congress, held in conjunction with the exposition. Other societies participating in the congress include the American Welding society, institute of metals and iron and steel divisions of the American Institute of Mining and Metallurgical Engineers and the Wire association. Papers already announced on the steel treaters' program are as follows:

"Mechanism of Crystal Growth," by Wheeler P. Davey, Pennsylvania State college, State College, Pa.

"The Action of Oxygen and Hydrogen Sulphide Upon Iron-Chromium Alloys at High Temperature," by R. L. Rickett and W. P. Wood, department of engineering research, University of Michigan, Ann Arbor, Mich.

"Notes on the Aging of Metals and Alloys," by Albert Sauveur, Harvard university, Cambridge, Mass.

"Sensitivity of Gamma-Ray Method of Radiography," by John T. Norton and Alfred Ziegler, department of mining and metallurgy, Massachusetts Institute of Technology, Cambridge, Mass.

"A Study of the Effect of Water Vapor on the Surface Decarburization of Steel by Hydrogen with Certain Developments in Gas Purification," by C. R. Austin, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Comparison of Single-Step Long-Time Creep Results with Hatfield Time-Yield Stress," by A. E. White and C. L. Clark, department of engineering research, University of Michigan, Ann Arbor, Mich.

"Some Problems of Quenching Steel Cylinders," by Howard Scott, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"The Heat Treatment of Cast Iron," by Carl H. Morken, Detroit Electric Furnace Co., Detroit.

"Structure and Constitution of an Alloy Steel," by O. W. Ellis, Ontario Research Foundation, Toronto, Ont.

"Investigation of the Treatment of Steels for Permanent Magnets," by R. L. Dowdell, University of Minnesota, Minneapolis.

"An Inquiry Into Deformation of Steel by Tensile Stress and the Interrelation of Deformation to Other Physical Properties," by E. J. Janitzky, Illinois Steel Co., Chicago.

"The Present Status of Age Hardening," by R. H. Harrington, research laboratories, General Electric Co., Schenectady, N. Y.

"Application of Thermodynamics to the Deoxidation of Liquid Steel," by John Chipman, department of engineering research, University of Michigan, Ann Arbor, Mich.

"Solidification of Steel in Ingot Molds," by L. H. Nelson, Davenport, Iowa.

"On the Manufacture of Rimming Steel," by William R. Fleming, Andrews Steel Co., Newport, Ky.

"Some Factors Affecting the Physical Properties and Corrosion Resistance of 18-8 Chrome-Nickel Steel Wire," by W. H. Wills and J. K. Findley, Ludlum Steel Co., Watervliet, N. Y.

"Alloys of Iron and Manganese," by F. M. Walters, John Eckel and Cyril Wells, Carnegie Institute of Technology, Pittsburgh.

"The Life of Turning Tools as Influenced by Shape," by O. W. Boston and W. W. Gilbert, department of engineering shops, University of Michigan, Ann Arbor, Mich.

"Basic Open-Hearth Carbon Steel for Cold Heading," by A. B. Arganbright, Wheeling Steel Corp., Portsmouth, O.

"The Linear Thermal Expansion and Alpha-Gamma Transformation Temperature of Pure Iron," by J. B. Austin and R. H. H. Pierce Jr., research laboratory, United States Steel Corp., Kearney, N. J.

"The Composition and Critical Temperature of Pearlite Containing 1 Per Cent Silicon," by A. E. Showalter, W. W. Delammater, department of metallurgy, Case School of Applied Science, and H. A. Schwartz, manager of research, National Malleable & Steel Casting Co., Cleveland.

"Thermal Conductivity of Iron and Steel and Some Other Metals in the Temperature Range 0-600 degrees Cent.," by S. M. Shelton and W. H. Wanger, bureau of standards, Washington.

"On the Design and Construction of a Precision High-Power Metallographic Apparatus," by F. F. Lucas, Bell Telephone Laboratories, New York.

"Study of Banding in Medium Carbon-Chrome-Molybdenum Steel," by E. R. Johnson and Mr. Buechling, Republic Steel Corp., Massillon, O.

"Bright Annealing of Steel in Mixed Gas Atmospheres," by A. L. Marshall, General Electric Co., Schenectady, N. Y.

"Martensitic Grains in Air-Cooled Low-Carbon Steel and Their Effect on Machinability," by O. W. McMullan, Timken-Detroit Axle Co., Detroit.

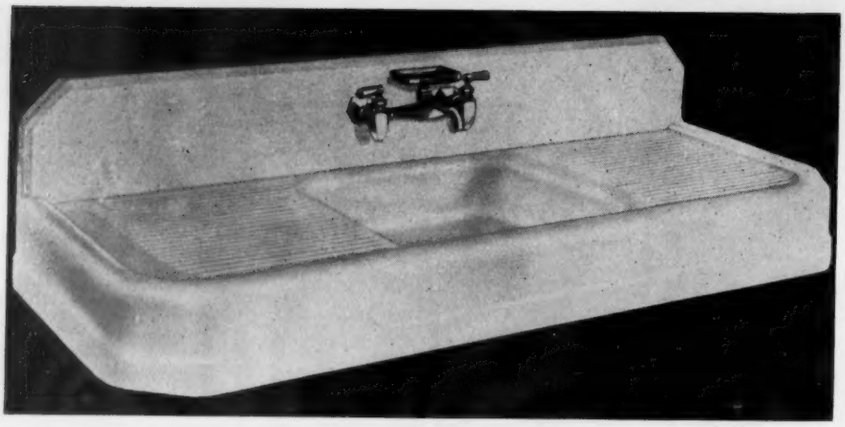
"Low-Temperature Impact Strength of Some Normalized Low-Alloy Steels," by J. J. Egan, Walter Crofts and A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"On Grain Size and Grain Growth," by M. A. Grossmann, Illinois Steel Co., Chicago.

"Cold Heading," by Carl Harvey, metallurgist, Lamson & Sessions Co., Kent, O.

Culvert Pipe Described

Data and illustrations citing advantages of Toncan copper-molybdenum iron sectional plate pipe are contained in a recently published 32-page booklet, being distributed by the Toncan Culvert Manufacturers' association, 335 Market street, Youngstown, O. Physical properties, erection details, specifications, etc., of this large diameter drainage pipe, are included.



This 60-inch kitchen sink with a back, double drainboard and full apron, is formed in one piece from 14-gage sheet steel. It is finished in acid-resisting white enamed

Enameled Sinks Pressed from Heavy-Gage Steel Sheets

KITCHEN sinks, of one-piece formed steel construction, finished in acid-resisting white enamel, and available in 15 patterns and 20 sizes, now are being manufactured by the Youngstown Pressed Steel Co., Warren, O. Advantages claimed for the new product are light weight, high strength, rigidity, pleasing appearance and economy.

Lengths range from 42 inches for the single drainboard type, with the drainboard on either the right or left-hand side, to 60 inches for the double-drainboard type shown in an accompanying illustration. Either a full apron or a roll rim is optional on single drainboard models. Flat rim and service sinks also are included in the line.

Weight 10-60 Pounds

Sink basins are straight-sided, with average overall width of 22 inches and depth of 6 inches. Backs are 8 inches high, aprons are 6 7/16 inches deep and drainboards range from 18 to 28 inches long. To carry off water, the drainboards are provided with a number of parallel grooves, set closely together to prevent glassware and kitchen utensils from upsetting.

Special analysis enameling sheets are used, 14-gage for models with rolled rims, backs and drainboards and 16-gage for flat rim models without backs and drainboards. Sink weights range from 10 to 60 pounds. It is said that one man can easily install one of the largest models.

Each sink is given one ground coat, two white cover coats and a final coat of acid-resisting enamel, each coat being fused into the steel in a conveyor-type electric furnace equipped with automatic temperature control. The coatings are claimed to have withstood severe acid abrasion and heat tests without damage.

All sinks are made without legs and are supported on from two to four wall brackets. The Youngstown company has developed a new pressed steel bracket assembly of light weight and high strength.

To produce the line of sinks, 64 separate dies, weighing a total of 197,200 pounds, are required. Over 100 separate operations are performed. The dies run in weight from 20 pounds to 24,000 pounds. They are used in presses exerting ram pressures of from 20,000 pounds to 3,000,000 pounds. Approximately 10,000 pounds of tool steel, 110,000 pounds of special alloy castings, 30,000 pounds of machine steel and 40,000 pounds of cast iron were used in making the dies.

A 40-quart milk can, which has a one-piece shell made by deep drawing. This is said to be the first can made in this way

Develop One-Piece Milk Can

The Youngstown company has facilities to manufacture a wide range of pressed metal products. Recently it received an order for 50,000 milk cans and to satisfy the needs of the customer developed what is claimed to be the first one-piece type of can. One of the cans is shown in the accompanying aillustration. These cans are of 40-quart capacity, are 22¼ inches high and 12⅞ inches in diameter. For their fabrication, 17-gage tinning steel is used.

The can shell is first made by deep drawing, after which the neck is formed by spinning. The bottom of the can is reinforced with an additional heavy pressed steel bottom which, in addition to supplying protection, provides a stacking feature. This bottom is welded to the can proper. The can is reinforced just below the breast by means of a heavy welded steel band, shrunk on and welded in place. Two substantial pressed steel handles also are welded to the can.

To provide protection against corrosion, the finished cans are cleaned and pickled and given a heavy coating of tin, the company recently having installed tin pots for this purpose.

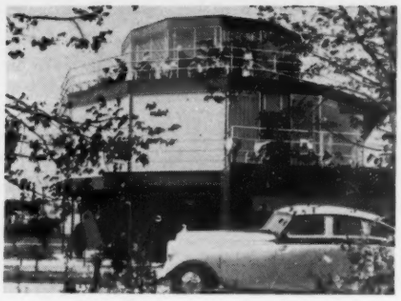
Offers Souvenir of Fair

An interesting souvenir booklet in colors has been prepared by the Link-Belt Co., Chicago, for distribution to visitors at the Link-Belt exhibit at A Century of Progress exposition in Chicago. The 48-page brochure describes and illustrates the wide range of conveying equipment made by this company, and will be mailed to any reader of STEEL upon request to the company.

Booklet Discusses Hot Tops

Features embodied in ingot mold hot tops manufactured by the Ferro Engineering Co., 1208 Hanna building, Cleveland, are described in a new 24-page illustrated booklet, copies of which are available from the above company. These tops are known to the trade as "C & D" hot tops.

Seen



at A

"The House of Tomorrow"

CENTURY OF PROGRESS

MOST unusual model home at the exposition from the standpoint of design is "The House of Tomorrow," frequently termed "The Glass House," because the living part of the house is all windows, none of which opens. Architect George F. Keck, Chicago, is the designer. The framework is steel, beams projecting from the axis of the house which is a steel pillar, 3 feet in diameter, fabricated in pipe form from plates ⅛-inch thick. Vertical members are of the concrete-filled tube type. The main section of the house has a radius of 19½ feet. A circular steel staircase is located around the center pillar. Steel joist floor construction is employed.

On the concrete ground floor a workshop, automobile garage and airplane hangar are located. Further around the circle are a laundry and a recreation room. Heating and air conditioning equipment also is situated on this floor.

Principal living quarters are located on the second floor which has glass walls throughout the circumference. Curtains, Venetian blinds and roller shades give privacy when desired. Steel railing surrounds a spacious porch covering a large portion of the circumference at this level, while on the top floor, where a circular glass solarium is located, there is another porch. Steel stairs also are provided outdoors between the two porches.

♦ ♦ ♦

Stainless steel is given a new use in an electric clock designed by the General Electric Co., Schenectady, N. Y., especially for the Illinois Steel Co. exhibit at the exposition. The clock is decidedly modern.

Highly polished chrome-nickel stainless steel which contrasts with an ebony black trim is used for the case. The polished hands show up like a mirror, as they move over a jet black background. The modern black numerals are set against a satin finished steel background. The bright metal surfaces of the case, in contrast with the black trim together with the character of the materials used, give great strength to the clock design.

The case is over 30 inches square and the face is 18 inches square. The clock itself weighs 75 pounds. The hands, including a traveling second hand, are turned by a standard commercial clock motor synchronized with the electric power supply.

♦ ♦ ♦

Ingersoll Steel & Disc Co., Chicago, division of the Borg Warner Corp. illustrates the corrosion resisting properties of its stainless-clad metal by suspending sections of this product and of plain carbon steel in acid. Various products made from the steel, including a beer barrel, are displayed. Morse Chain Co., Ithaca, N. Y., has an exhibit of several chain drives, while other Borg Warner subsidiaries also show their respective products.

♦ ♦ ♦

When the Hyatt Roller Bearing Co., Harrison, N. J., planned its exhibit in the General Motors building, it had in mind that the average person seldom actually sees the bearings which are hidden away in the working parts of a machine. Therefore, a representative group of actual-size automotive, agricultural and industrial units, cut away to show the bearing mountings, are displayed.

Supplementary to these cutaway

parts are two large murals which constitute the background and give a composite picture of the size and kinds of equipment employing bearings extensively. This panorama is explained by an electric traveling sign which clocks off the multitudes of uses.

The center of the display is occupied by an illuminated 7-foot scale model of the company's plant in Harrison. The faithful detail with which this model was reproduced, from the spray pond and coal pile at either end of the 7-acre plot to the power house stacks and water tower on the 8-story group of buildings, has drawn much favorable comment from Fair visitors.

♦ ♦ ♦

The exhibit of the Chicago Bridge & Iron Works, Chicago, consists of two automatic slide machines displaying a wide range of the company's installations on two separate screens at the same time and six groups of colored transparencies. One group shows various plant facilities of the organization in the United States and Canada, while a second group presents typical types of large water tanks for

municipal service, including several of the new radial-cone bottom type.

Two diagrammatic views show a gravity-type municipal water works system and the method by which gravity water supplies are used for fire protection in industrial plants. Two of the other illustrations are cutaway views of Wiggins roofs of the floating and breather types for oil tanks. One shows how a floating roof rides directly on the surface of the oil in the tank at all times, thus reducing evaporation loss and fire hazard. The other cut-away view shows a breather roof. It is a practically flat roof which prevents evaporation from standing storage tanks by flexing up and down as thermal expansion and contraction takes place within the tanks.

♦ ♦ ♦

Ferro Enamel Corp., Cleveland, cuts and transfers individual silhouettes to porcelain enamel while visitors pass through the porcelain enameled steel house built by this company and American Rolling Mill Co. The porcelain enamel silhouettes are sprayed on steel and then fused in an electric furnace at a temperature of approximately 1400 degrees Fahr. The finished picture will last forever.

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part VI—Open-Hearth Furnace Ends

(Forty-Fourth Article of Series)

FUEL port design shown in Fig. 59 is especially to be commended. Here a water-cooled ring protects and maintains the end, while the development of the protecting brickwork permits a considerable adjustment of the burner and the axis of firing to be easily accomplished. While the outer diameter of the water-cooled burner may modify the following recommendation of ring size, a ring having an interior clearance of about 24 inches high and 15 inches wide will meet the requirements of most practices.

The design of the bridge wall should be accomplished the same as for the producer gas fired furnaces. However, owing to the lesser height of the fuel nozzle the bridge wall will be of less height than that previously described.

How Slope Angle Is Found

Bearing in mind that the area A_1 should be greater than that of A_2 by perhaps 20 per cent, the area A_4, which is above the bridge wall crest and fuel nozzle, may be calculated and the elevation of the top of the outer roof slope established and from this the slope angle found. This will be considerably less than for producer gas design, probably only 3 or 4 degrees more than the slope of the apron.

The downtake area, A_5, which will be entirely in two ducts, may be found from Fig. 63 and with the width, wh, established, (section A_5, Fig. 60), the length, lh, (section C-C, Fig. 59) may be established, and thus, assuming the incorporation of the proper refractory materials in accordance with previously explained principles, the refractory design of the end completed.

The steel, binding and supporting the brickwork at the furnace ends, is of simple design and usually closely adheres to a single general arrangement, little opportunity being afforded for nonconventional schemes. To clarify the discussion of this steelwork a typical arrangement is presented in Fig. 64.

The slab buckstays of the furnace laboratory binding customarily should include a total of six sets (for the usual five-door furnace) thus including this type of binding on both sides of the end doors. Th s final set of buckstays, BS4, Fig. 64, will be straight at the back wall, the latter developing to its maximum width between this straight set and the following set, BS5, which will register between the first and second doors and will be of the vent design.

The slab buckstays are included where it is necessary to use elements of considerable section to restrain relatively great loadings under severe thermal conditions. At the ends of the furnace neither the loadings or the thermal effects are as severe as at the laboratory. Consequently, it is usual to change the buckstays type at the furnace ends to common rolled-steel sections, preferably I-beams. The fabricating of the end and furnace structure is simplified if the depth of the I-beam buckstays is the same as that of the slabs, and this idea generally is followed.

The slab buckstays binding the furnace proper and the chills are supported directly on the outer bottom girders, BG, which are in turn supported on appropriate piers which transmit all dead weight loading to suitable foundations.

The buckstays for binding the ends and their vertical loadings, depending on the slag pocket arrangement, are supported on the slag pocket brickwork; they may be superimposed on the slag pocket binding steel, as indicated; or, under some particularly favorable conditions, the end binding may be supported directly from ground level through four independent columns at the corners of the slag pocket.

No Fixed Method Prescribed

Thus it is evident that no fixed method of support of the end steel can be recommended or described, circumstances which cannot be prescribed governing the selection of the method.

The buckstays at the front and back walls must restrain the roof thrust and support the roof weight and, consequently, they must be selected to accomplish this end.

Before considering the stresses developed in the buckstays, the limits of their spacing and the magnitude of the horizontal forces developed by the roof thrust will be examined. It is convenient to include three sets of front and back I-beam buckstays in the design. These will permit the spacing to be such that one pair, BS1, will be immediately in line with the back wall to take the thrust of the bulkhead arches; one pair, BS2, will be located so as to afford support to the arches of the uptakes; while the third set, BS3, will be disposed about equidistant

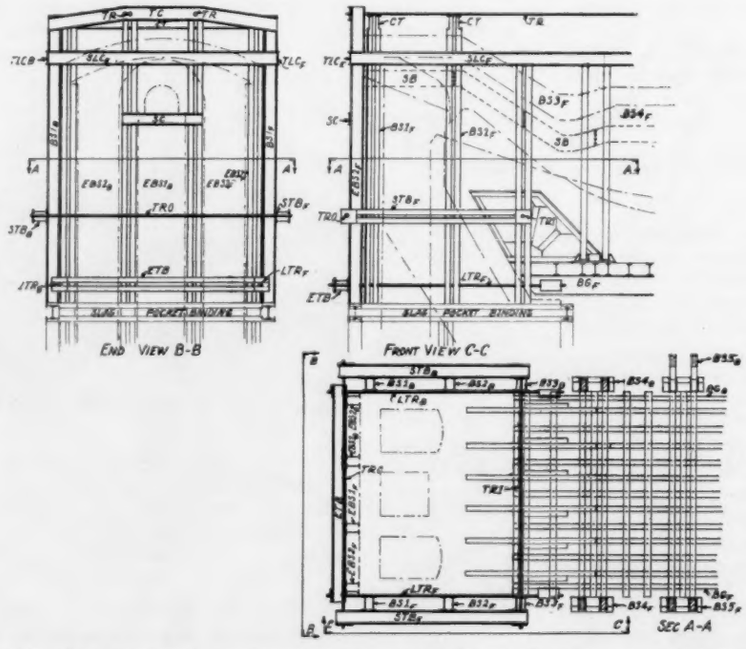


Fig. 64—Schematic arrangement of binding steel for open-hearth furnaces

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from this last set and the slab buckstays, BS4, to reduce the spacing. The maximum loadings, as will be seen by examination of Fig. 64, will be encountered at BS2 and, consequently, consideration of the loading centers around this set. Convenience probably will require the irregular spacing of all of these members.

The horizontal forces bearing on the buckstays are dependent on the statics of the roof as transmitted through the skewbacks. The first item in the determination of the horizontal forces will be the roof weight. This conveniently may be determined by assigning a roof thickness and its weight through the use of the chart, Fig. 65, and the two forces developed are found by the use of equations Nos. 7 and 10. These values will be for 1 foot of skewback length.

Data Are Tabulated

The basic data necessary for a consideration of the stresses in the end steel are tabulated in Table LXXIII. Here, as in previous discussions, a 100-ton furnace is assumed as representing the minimum condition; a 150-ton furnace, the common furnace of tonnage practice; and, a 350-ton furnace, the maximum condition.

The noted derivation of the several items probably will be self-explanatory, except in the cases of items f, h and r, and the following explanation with reference to the items is offered.

The maximum length of the roof supported, item f, is half the sum of the distance, center to center, between buckstays BS1 and BS2, and BS2 and BS3. As will be seen by inspection of Fig. 64, this places the maximum horizontal thrust on buckstay BS2.

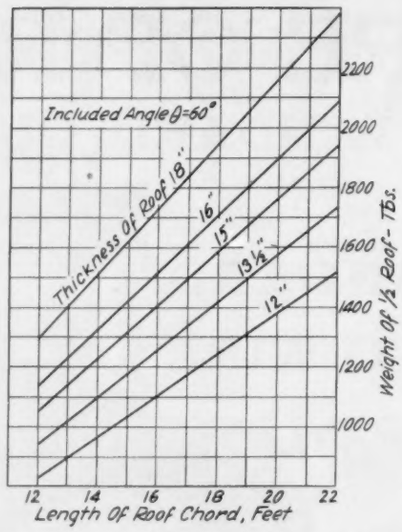

Fig. 65—Chart for determining one-half the weight (½W) of unribbed silica brick roofs per foot of roof length. Included angle θ=60 degrees

The horizontal skewback loading, span of roof supported, item h, is the distance clear between buckstays BS1 and BS2, this again represents the particular maximum condition encountered.

The vertical skewback loading, span of roof supported, item r, is the same distance as of the preceding paragraph plus 12 inches, added on the assumption that the face of the buckstays will approximate 12 inches.

As explained in the prior chapter on the skew system for the main roof, the skewbacks will be chosen on a basis of the section modulus of the Y-Y axes of the appropriate channels, Fig. XLVII.

On account of the better resistance to thermal effects, the cast-steel sections again are recommended in preference to the rolled-steel sections. While none of the sections listed in Table LXVII is of sufficient strength (the distance the skewbacks are required to span in the clear being greater than at the furnace proper) those used at the furnace ends may be reinforced easily and amply by the addition of a rolled-steel I-beam riveted or bolted to the outer face, No interference will develop by the use of such reinforcing as would be the case over the doors.

Direct Loading Is Avoided

The suspension type of skewbacks, Fig. 38, are recommended for inclusion in the end design, for this design, while not as essential of inclusion as it is at the furnace proper, has the advantage of relieving the brick walls of a considerable direct loading.

As mentioned in the prior chapter on detailed skewback design, any channel member that has as much as 50 per cent of the required strength necessary to restrain the horizontal loadings on its Y-Y axis, will be of ample strength to support the vertical loading on its x-x avis.

(To be concluded)

Table LXXIII

Data Upon Which Steel Work of Furnace Ends Is Computed

General Data	Line	Derivation	Rated Capacity, Tons 100	150	350
Roof span, feet	a	E Table IX—18 inches	15	17	23
Thickness of roof brick, inches	b	Arbitrary	12	18	18
½W pounds	c	Fig. 65	1,140	1,840	2,580
*HF per foot in pounds	d	Equation No. 7	2,140	3,440	4,825
†DF per foot in pounds	e	Equation No. 10	1,235	1,980	2,775
Data for Horizontal Buckstay Loading:					
Maximum length of roof supported, feet	f	Calculated	7	7¾	8½
Total *HF, pounds	g	d × f	15,000	26,600	41,000
Data for Horizontal Skew Back Loading:					
Span of roof supported, feet	h	Calculated	7	8	9
Total *HF, pounds	i	d × h	15,000	27,500	43,500
Maximum moment in pounds	j	i × h × 12/8	157,600	309,000	522,000
S @ 7000 pounds fiber stress	k	j/7000	22.5	44.2	74.6
S @ 9000 pounds fiber stress	l	j/9000	17.5	34.3	58.0
Data for Vertical Skewback Loading:					
†DF per foot in pounds	m	Item e	1,235	1,980	2,775
½W per foot in pounds	n	Item c	1,140	1,840	2,580
Weight of skewback brick	o	Calculated	140	160	160
Weight of skewback	p	Calculated	160	180	200
Vertical loading per foot	q	m + n + o + p	2,675	4,160	5,715
Span of roof supported, feet	r	h + 12 inches	8	9	10
Total vertical loading	s	q × r	21,400	37,440	57,150
Maximum moment in pounds	t	s × r × 12/8	257,000	505,000	857,000
S @ 7000 pounds fiber stress	u	t/7000	36.7	72.1	122.4
S @ 9000 pounds fiber stress	v	t/9000	28.6	56.1	95.2

*HF, horizontal force.
†DF, downward force.

WOULD ORDINARY JOINTS *weather this?*

Oxwelded Joints Held Where Others Failed

WHEN this 3,000-gallon, aluminum gasoline-truck tank took the road, nobody knew it would land in a ditch six months later—with the results shown in the second illustration! Yet it did, and the oxwelded joints were put to as severe a test as anyone could ask.

Being bent double for thirty inches didn't destroy the oxwelded joints a bit. Though the tank was fully loaded, not a leak developed. But the trailer's tank, which was not oxwelded, split wide all along the longitudinal seam . . . which proves, about as well as anything can, that oxy-acetylene welded joints give a product the extra strength it needs in times of trouble.

Oxwelded aluminum gasoline-truck tank before and after the accident. Not a welded joint failed.

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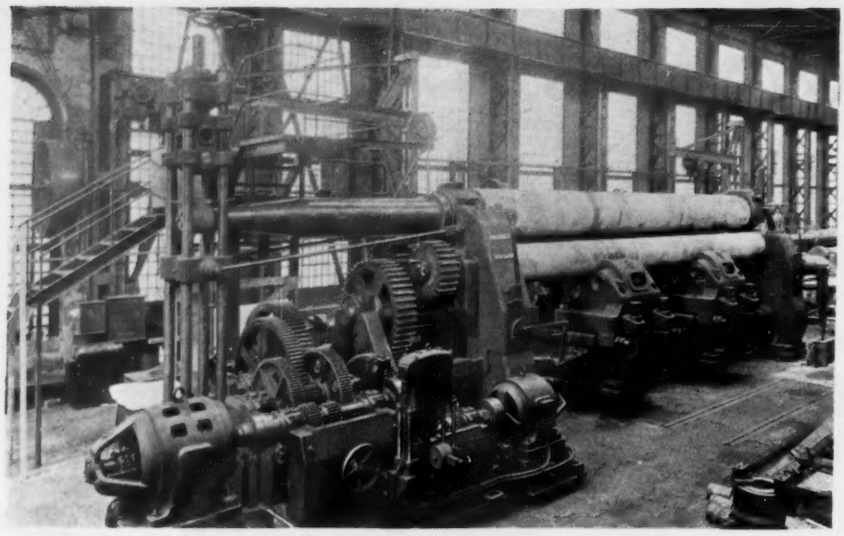


New 3-Roll Bending Machine Forms Large Steel Plates Into Pipe

A MACHINE designed for cold bending steel plates for welded or riveted pipe or boilers is attracting considerable attention because of its size and capacity. This machine, shown in the accompanying illustration, is of the 3-roll type and can handle plates up to 28 feet long and 1¾ inches thick based on a tensile strength of about 70,000 pounds per square inch. The minimum diameter to which a plate can be bent is 41 inches.

The top roll is 34½ inches in diameter and weighs 55 tons; the lower rolls are 23⅝ inches diameter and each weighs 23 tons. The illustration shows the drive of the rolls, also the device for tilting the upper roll to remove a plate endwise after it has been bent. The top roll is crowned to give it greater resistance against bending, while the lower rolls are cylindrical and provided with two intermediate roller type supports.

Three Drive Motors Provided

A 170-horsepower reversible motor provides the power driving the rolls, a 110-horsepower motor tilts the upper roll and a 6-horsepower motor operates the device which disengages the outer bearing from the upper roll so that the latter may be tilted. Control of the machine is from a raised platform mounted adjacent to the driven end of the rolls and on this platform is a large dial which indicates the setting of the upper roll.

For the initial bending of the edges of the plates before placing them between the rolls, a 385-ton hydraulic press is used.

This equipment was built by Wagner & Co., Dortmund, Germany, represented in the United States by Marburg Bros. Inc., 90 West street, New York.

Establishes Weld Testing Bureau

PITTSBURGH TESTING LABORATORY, Pittsburgh, announces organization of a welding division to be known as the National Weld Testing Bureau. This new division will be headed by James W. Owens, well-known welding engineer, as its director. Headquarters will be maintained in Pittsburgh.

The bureau proposes to render a complete welding service to manufacturers, fabricators, contractors, and others, along six definite lines as follows: Reports on welding processes; reports on weld specimens prior to construction, commonly termed "qualification of welders;" reports on weld specimens during construction; laboratory tests of weld specimens; inspection of welded products and structures; and investigation of various special welding problems.

The first three services are essentially new types of commercial activity based on the requirements for weld testing as embodied in numerous specifications, codes or rules, and recommended good practices relating to new welded construction and to repairs by welding. The primary objectives of these three services, which are featured in a bulletin just released by the company, are to assist manufacturers and other interests to comply with these requirements, and to provide them with a means for satisfying purchasers of welded products, also federal, state, municipal, insurance company, or other inspectors, that these requirements have been met insofar as they relate to the welding process and class of workmanship required.

Will Not Set Up New Standards

It is stated that the bureau does not propose to set up weld testing standards of its own, but will use and adhere strictly to those of recognized technical societies, underwriters' laboratories, and other engineering groups. In rendering the first two of its weld testing services, the bureau's representatives will observe welding and testing of specimens in the field and in the plants of its clients.

The bureau claims to be the first nation-wide organization of its type to be established for the purpose of providing a standardized weld testing service. This service will be neutral as regards the welding process, type or make of equipment, or the class of base or filler metal sold or used.

Sand Blasting Cleans Steel Beer Barrels

With increasing popularity of the steel beer barrel and the mechanized conveyor lines set up for their mass production, manufacturers require a cleaning process which will quickly and economically prepare the interiors of the containers for the pitch or composition coating which protects and conserves the malt flavor of the brewed beverage and the exteriors for the rust-resisting coating to provide long life under rough handling.

These cleaning and surface preparing operations are accomplished by sand blasting and three special types of machines have been developed. One of these machines is an automatic barrel blast arranged to blast the outsides. When cleaning is completed, the barrels are dropped automatically from the machine and new barrels are loaded into place. Capacity is 50 barrels per hour, although where desired a machine with double this capacity can be designed.

The second is a specially designed blast machine for cleaning the inside of the barrels preparatory to receiving the pitch or other finish coating. Capacity of this machine is 30 to 100 barrels per hour.

The third machine also is for cleaning the interior of the barrels

ADVERTISING PAGES REMOVED

when the process of fabrication is that of welding two cup-shaped halves together. In this case, the two shells have their interiors automatically sandblasted before they are welded.

Welding Society Arranges Program

TENTATIVE program for the thirteenth fall meeting of the American Welding society, to be held Oct. 2-6 at the Book-Cadillac hotel, Detroit, concurrently with the National Metal congress and exposition (see p. 27), has been announced. Sessions will open Monday afternoon, Oct. 2, and continue morning and afternoon through Thursday, Oct. 5. Inspection trips, committee meetings, and the annual banquet will supplement reading and discussion of technical papers, tentative list of the latter being as follows:

"Impact Resistance of Welded Joints—A Survey of the Literature," by W. Spraragen, technical secretary, American Welding society, New York.

"Use of Shielded Carbon Arc in Class 1 Welding," by E. W. P. Smith, consulting engineer, the Lincoln Electric Co., Cleveland.

"Manufacture of Small Everdur Tanks by Welding," by Ira T. Hook, American Brass Co., Waterbury, Conn.

"Welding of Chrome Alloy Steels," by W. B. Miller, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Welding of Oxygen-Free Copper," by R. W. Summey, U. S. Metals Refining Co., New York.

"Welding of Nonferrous Metals and Alloy Steel," by representative, Thomson-Gibb Electric Welding Co., Bay City, Mich.

"Atomic Hydrogen Welded Tubing," by E. Riemenschneider, Midland Steel Products Co., Cleveland.

"Physical Properties of Welded Cast Steel" by Chas. H. Jennings, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Tensile Tests of Welded and Riveted Structural Members," by R. P. Davis, dean, West Virginia university, Morgantown, W. Va.

"Electric Arc Welding Under Water," by N. S. Hibshman and C. D. Jensen, assistant professors, electrical and civil engineering, and W. R. Harvey, assistant professor, Lehigh university, Bethlehem, Pa.

"The Effects of Motor Reactions in Electric Welding," by W. R. Woolrich, professor of mechanical engineering and J. Tarboux, professor of electrical engineering, University of Tennessee, Knoxville, Tenn., and C. T. Raymo and W. B. Parker.

"Fatigue of Metals," by G. E. Thornton, department of mechanical engineering, State College of Washington, Pullman, Wash.

"Internal Stresses in Welds," by C. T. Schwarze, department of civil engineering, New York university, New York.

"Development and Application of Automatic Welding Controls," by H. W. Roth, president, Controloweld Corp., Detroit.

"Controlled Welding," by O. C. Frederick, General Electric Co., Schenectady, N. Y.

"Precision Spot Welding with Tube-Controlled Contactors," by C. Stansbury, engineering department, Cutler Hammer Inc., Milwaukee.

"Continuous Seam Welding of Pressure Vessels by the Resistance Method," by representative, A. O. Smith Corp., Milwaukee.

"Shipbuilding Welding," by G. H. Moore, Jr., Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

"Welding of Structural Nickel Steel," by W. L. Warner, Watertown arsenal, Watertown, Mass.

"Welding of Galvanized Steel," by Leon C. Bibber, bureau of construction and repair, Navy department, Washington.

"An Aircraft Manufacturer's Experience with Welding Quality Control," by T. H. Speller, Curtiss Aeroplane & Motor Co. Inc., Buffalo.

"Shop Setup for Pre-fabrication of Welded Machinery," by C. A. Bowlus, Kelvinator Co., Detroit.

"Thermit Welding of Rail Under Traffic," by J. H. Deppeler, Metal & Thermit Corp., New York.

"Pressure Regulators," by J. J. Crowe Air Reduction Sales Co., New York.

To Collect Standards Data For Tool Engineers

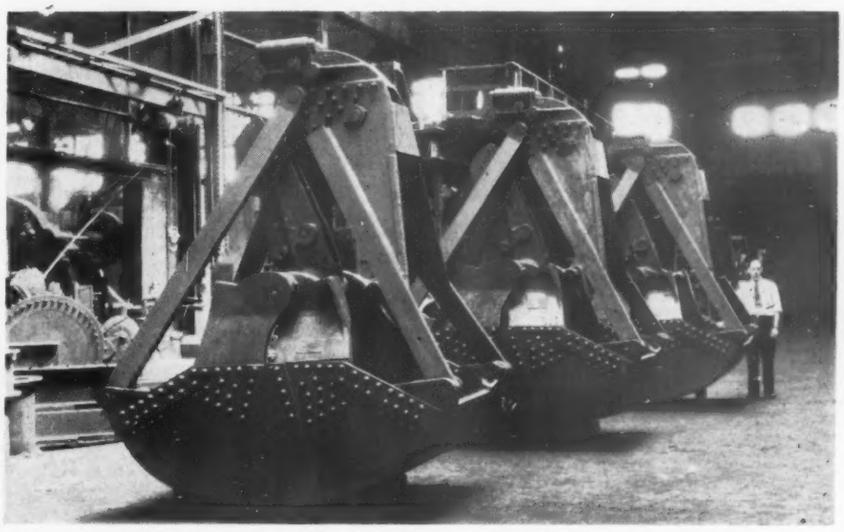
Through its various standardization committees, the American Society of Tool Engineers has instigated the collection and compilation in reference book form, of engineering data, established standards and other information dealing with standard products and materials which are in daily use by tool designers and engineers. Engineering societies, manufacturers and others active in the development and promotion of standard products are urged to send full information to the secretary of the society, 8316 Woodward avenue, Detroit, for inclusion in the contemplated reference book.

Steel Men To Go to Chicago

Steel day at A Century of Progress exposition in Chicago will be celebrated Saturday, Oct. 21, immediately following the eleventh annual convention of the American Institute of Steel Construction at Stevens hotel, Oct. 17-20. A special program for the former is being arranged by the American Iron and Steel institute, while advance reports state that discussions of special significance in regard to the national recovery act are being planned for the latter meeting.

New Booklet on Dam Issued

Volume 3 in a series of booklets, "The Story of the Hoover (Boulder) Dam," has been published for distribution by Ingersoll-Rand Co., 11 Broadway, New York. The current volume comprises 48 pages with 67 illustrations. It describes the railroad system, the gravel-treating and concrete-mixing plants at the dam site, and the lining of the four 50-foot diversion tunnels with concrete. The booklet also contains a general account of the Colorado river aqueduct which will subsequently transport water from the river to Los Angeles.



DREDGING 220 FEET UNDER WATER: Here are shown three special heavy-duty 3 cubic yard dredging buckets built by Wellman Engineering Co., Cleveland, for use in excavating for piers of the $70,000,000 San Francisco-Oakland Bay bridge. They were purchased by the Transbay Construction Co. and will work at a maximum depth of 220 feet under water. Because of the severity of service to which these buckets will be subjected, the 2½ x 6-inch side bars are of chromium-manganese-silicon steel developed some time ago by Electro Metallurgical Sales Co., New York (STEEL, *Oct. 26, 1931, page 46*). *This steel affords higher physical properties without increasing weight. The scoop plates are of 1-inch steel plate and lips of 1½-inch heat treated alloy steel. In addition to these three buckets, four similar ones of 2 cubic yard capacity were ordered by Bridge Builders Inc., who with the Transbay company, have the contract for construction of the piers*

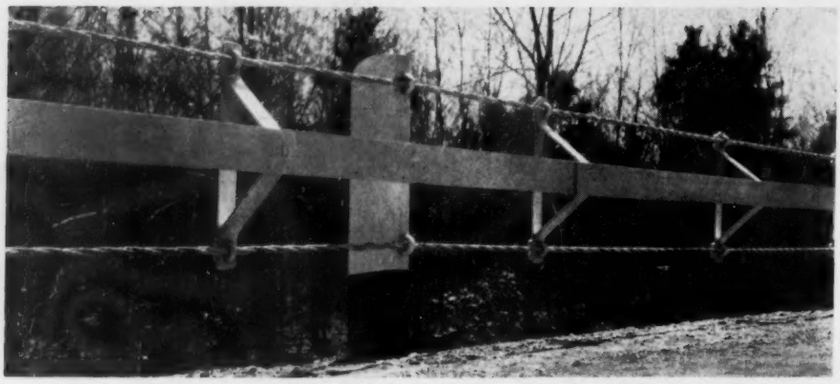


Photo courtesy American Steel & Wire Co., Chicago

A deflector rail used in combination with wire rope highway guards serves to transmit the strain from a crashing vehicle equally to the two strands. This distribution of stress increases post spacing from 10 to 16 feet and offsets additional cost of the deflector

LARGE USES OF STEEL IN SMALL WAYS

246th Article ◆ Wire Rope Highway Guards

STEEL wire strand has sprung into prominent use in highway guard rails with the trend in recent years to improved roads and the accompanying safeguards in railings and fences. State highway departments have found the safety factor inherent in steel wire rope. Many of the more progressive states have been specifying wire rope guards in highway fences for several years and often each state's annual purchases will amount to as much as half a million feet of cable.

Many variations to the design of the fence using the steel wire strand are found. The most popular type calls for two cables stretched horizontally between wooden posts set in the ground. In many southern states, on the other hand, linked mesh is used instead of the strand (IRON TRADE REVIEW, July 14, 1927, page 71) and one important northern wire producer is now working on a 21-strand belt of thin wire strand.

Cable of Galvanized Wire

The majority of states, however, have adopted as standard a type of construction consisting of a 3-strand cable which is galvanized. Each cable is generally ¾-inch in diameter. Each of the three strands is made up in itself of seven wires, one being taken as a core and the other six formed over it. Therefore, the entire cable is actually made up of 21 wires, its minimum breaking strength being 15,000 pounds.

In the manufacture of the cable, each of the 21 individual wires is cold drawn from an original No. 5 gage down to 0.120-inch diameter. The wire then is annealed and galvanized by the continuous hot-dip process. Next, the wire is prepared for stranding by winding it in a single continuous length onto spools holding about 600 pounds of wire each.

The stranding machine consists of a long horizontal cylinder in which the wire spools are mounted, a forming die through which the strand is pulled, a pull-out drum which draws the strand from the machine, and a winding machine.

Seven Spools in Tandem

Each of the seven spools of wire is mounted in tandem within the core of the horizontal cylinder with the cylinder itself rotating about them at a speed of approximately 300 revolutions per minute. The spindles of these spools are at right angles to the axis of the cylinder and the spools do not rotate with the cylinder. These spindles simply unwind as the wires are pulled lengthwise of the machine from the spools to the walls of the cylinder. The wires are drawn together at the finishing and where they go through the forming die.

This stationary forming die forces the six outer wires over the core to make a smooth round strand. The speed of the pull-out drum is held in relation to the rotating speed in order to produce the proper pitch of the wires. The outer wires make one complete wrap around the core wire in every 4½ inches of strand, or in other words, the "lay" of the strand is spoken of as 4½ inches.

As the wires are led off from the spools they are not twisted but rather are pulled as they are being whirled around inside of the drum. After each of the three strands is completed the cable is next constructed in the same manner with the exception that the strand instead of the wire is wound on the spools and three spools are used in the machine instead of seven. The finished cable is drawn through the forming die by a pull-out drum and then wound on a wooden spool in 2000-foot lengths. It is then ready for shipment.

Combined with Deflector Rail

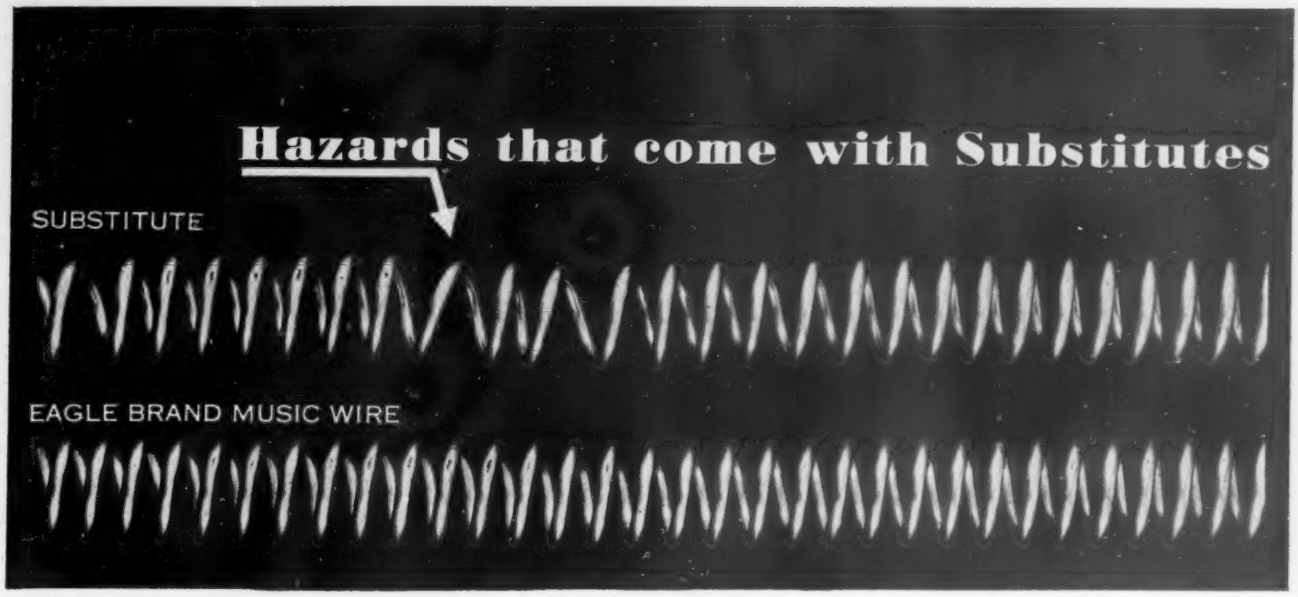
A new type of deflector rail, used in combination with wire strand, is shown in the accompanying illustration. This rail, centered 19 inches above the ground, serves to transmit the strain from a crashing vehicle equally between the two strands, whereas without its use the full impact would be received first by the lower cable from the wheels, fender or bumper of the automobile and later by the upper strand. Distribution of the impact equally permits an increase of 10 to 16 feet in post spacing, thereby offsetting the additional cost of the deflector.

The rail is made of structural grade, hot-rolled steel, 4½ inches wide and ¼-inch thick, and may be painted or decorated to give increased visibility. This type of steel also is used for the bracket supporting rail, which is 2-inches wide and ½-inch thick, and for the tension strap. The latter, 2 x ¼ inches, holds the bracket ends and the two cables. Connecting sections of the deflector rail are lapped in the direction of traffic and bolted together with ⅝-inch head, countersunk, machine screws in order to present no obstruction to a glancing blow. U-bolts securing the cable are ⅝-inch in diameter.

X-Ray Booklet Published

Copies of a 20-page booklet describing and illustrating portable industrial X-ray apparatus manufactured and distributed by the Industrial X-Ray Corp., Chamber of Commerce building, Los Angeles, are available upon request to the company. Practical examples of how this equipment has been developed and adapted to the every-day metal inspection needs of various industries are cited in the catalog.

A 40-page manual discussing profitable uses of arc welding is in process of preparation by the Hobart Bros. Co., Troy, O., builder of arc welding machines. The illustrated brochure will be available upon request.



SINCE 1855, Music Wire has been recognized internationally as the finest grade of wire produced in the world. In these days of extreme economies an inferior wire is being offered as a SUBSTITUTE. Is a symbol of quality that has existed for seventy-seven years to be destroyed?

Naturally, there are many hazards that come with using these substitute music wires. Among these are:

The added cost of inspection, waste of wire, trouble in automatic spring-making machines, and other difficulties due to lack of uniformity, quality, and cast.

Genuine Music Wire is made from selected Swedish Steel. Great care is taken in rolling the steel into rods to avoid seams or laps. Long experience and precision in the heat treating operations contribute to the quality of Genuine Music Wire. And, above all, the gradual reduction given at each draft holds the accuracy of size, uniformity, and given tensile strength.

As an executive, you will see how easy it would be to substitute inferior stock and take short cuts to produce a White Liquor finish that resembles or imitates Genuine Music Wire in finish alone.

To guard against the hazards that come with using substitutes, it is advisable to specify "Eagle" Brand Music Wire. It is to your advantage to do so because, in the long run, you pay for genuine quality whether you buy it or not.

●

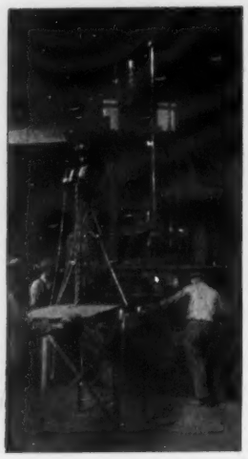
WASHBURN WIRE CO., PHILLIPSDALE, R. I.
WASHBURN WIRE CO., INC., NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS—STRIP—RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

Making the Most of

METHODS AND MATERIALS



RECEIVING delivery of the first of a new fleet of delivery trucks, a large Philadelphia department store had all the working parts, excepting the major units of the chassis, completely disassembled so that these parts could be cadmium plated for rust protection. Such parts as could not be plated were given two coats of aluminum paint which was found to be satisfactory for large areas not subject to mechanical wear. The entire chassis was painted with aluminum paint both for cleanliness and better visibility for inspection and repairs. For appearance and serviceability, much chromium plating was done on the truck. Steps, floor plates and kick plates, subject to unusual wear, are made of stainless steel.

$ $ $

A producer of centrifugal castings eliminated cracking and seaming of the cast iron dies in which he cast various ferrous and nonferrous metals by alloying the dies with 1 per cent molybdeneum. It is claimed that, in addition to giving a life several times longer than former dies, the molybdenum addition eliminated sticking of the castings after solidification. These results corroborate those discovered in Europe where an addition of 0.30 per cent molybdenum is added in ingot molds to increase the life of the molds about 50 per cent.

$ $ $

SURFACE hardening of rolled steel by means of the oxyacetylene torch is finding increasing use. The operation is performed through local heating with the torch which burns a mixture containing a slightly higher ratio of acetylene than is customary in cutting and welding. The torch is approximately 3 inches wide and is provided with small burners. After heating, the steel is quenched with water. Surfaces may be hardened in this way to a depth of ¼-inch, while the depth of the hardest cases is about 1/16 inch. By this method, a brinell hardness as high as 550 has been obtained in chromium-manganese-silicon steel, and 600 brinell has been obtained in steel containing 1 per cent carbon and 1 per cent chromium.

$ $ $

A large manufacturer of various forms of glass has adopted the practice of chromium plating its gray iron glass molds. It is said that when so plated the glass does not stick to the molds and that wear is reduced.

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The best drawing compound for heavy-gage chrome-nickel stainless steel is white lead thinned down with linseed oil to about the consistency of a 600W engine oil. Most of the

standard drawing compounds will work satisfactorily provided they are mixed to the proper consistency which is about that indicated in the case of white lead.

$ $ $

Steel containing 0.90 to 1.20 per cent manganese and 1.00 to 1.50 nickel is coming into wide use to replace carbon or low alloy steel castings for applications where the desired improvements in static and dynamic properties do not warrant the use of the higher alloy steels, and where economy of cost is a major factor. It presents no difficulties in melting, heat treatment or foundry practice, and uniform and dependable results are procured easily. A 29,800-pound excavator bed casting made recently from steel containing 0.28 carbon, 0.95 manganese, and 1.50 per cent nickel, showed the following properties: Tensile strength, 86,800 pounds per square inch; yield point, 57,000 pounds per square inch; elongation, 27 per cent; reduction of area, 57 per cent; and Charpy impact, 22 foot-pounds.

$ $ $

The principal aim in heat treating duralumin is to convey heat to the parts with the maximum uniform distribution. With heat treating, the tensile strength is doubled, being raised from the normal strength of 26,000 pounds per square inch to approximately 55,000 pounds per square inch.

$ $ $

RECENT calculations by naval architects show a great reduction in fuel consumption resulting from the use of high-strength steel. By reducing the weight of a 16,000 deadweight ton ship by 20 per cent through use of high-strength steel, the calculations show the same speed can be obtained with a fuel saving at the rate of $70,000 per year.

$ $ $

Nickel, when buffed, presents a pleasing surface with a slight yellowish tinge. When rust protection is desired, heavy coatings must be applied. The brilliant nickel surface has a tendency to tarnish which spoils the effect. Chromium is a true finishing material, unsurpassed in its bluish brilliance and nontarnishing preperties. Wiping with a clean cloth restores a dirty chromium surface.

$ $ $

In tests of enameled cast iron pieces, it was found recently that irons which blistered in normal atmospheres of air did not blister in an atmosphere of nitrogen. Some tests were made on iron which normally blisters but which will not blister if the surface is machined. These gave off CO_2 from the unmachined surface, but with the surface removed, CO_2 ceased when the enamel fused. An iron was discovered which had the same analysis as the distinctly blistering iron; but which, contrary to the other, could be cured by machining. Metallographic and analytical data showed that there was a localized cementite layer near the surface which diminished blistering when removed. The investigation still indicates that blistering is associated with the oxidation of carbon in a particular state in certain irons.

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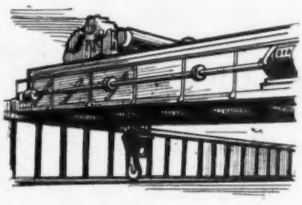
PROGRESS IN STEELMAKING

PURE water should be avoided in quenching alloy steel for hardening and a 5 to 10 per cent caustic solution or a 10 per cent brine solution employed, according to a metallurgist engaged in this branch of heat treating. The foregoing solutions afford a more uniform quench than pure water and throw the scale from the work, thus effecting a clean surface free from soft spots. Caustic is much faster than brine and is recommended for carbonizing both low-carbon and alloy steel parts.

♦ ♦ ♦

A regular amount of lime paste should be added to the lime tubs for a definite number of rounds or tons of rods treated, according to an authority on wire drawing. The most effective practice is obtained by maintaining the lime solution at the proper strength, the same as in pickling practice.



ADOPTION of a simple method of greasing cranes at a sheet mill in Ohio has minimized drippage and, consequently, the spoilage of stock being processed. Two receptacles are used by the oiler, one containing sufficient wool waste saturated with black oil to pack track wheel journal boxes on all cranes, and the other serving as a receiver for the spent dope removed from the cranes. At the close of the week when the cranes are idle, all of the journals are repacked with the new wool waste saturated with the black oil. The spent dope is not discarded but is salvaged by loosening and fluffing up the waste and adding a fresh supply of lubricant. For the first two or three turns after the cranes have been oiled, the operators pay particular attention to expelled oil and wipe it off before drippage occurs to mar the surface of the high-grade sheets being processed in the finishing department.

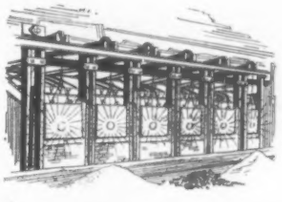
A NEW type of welding rod has been developed for welding high-strength steel. Welds made with this rod have shown from 90,000 to 96,000 pounds tensile strength with a bend elongation of 15 to 20 per cent. For the first time, therefore, welds of high-strength steel are as strong or stronger than the high-strength steel itself. The composition of the new rods includes chromium, manganese and silicon.

♦ ♦ ♦

Measuring the flatness of steel plates which have been machined, ground or scraped is facilitated by a newly devised instrument. The unit includes a channel which supports a cylindrical line contact at one end, a micrometer at the other end, and a sensitive light wave indicator in the center. All three measuring contacts can be changed to various positions to permit measuring different surfaces. Machined or scraped surfaces are measured by auxiliary flat contacts. The micrometer end of the unit is lowered on the surface to be tested until a slight movement of the interference bands on the indicator shows contact of the center point. The micrometer then shows the amount of surface convexity or concavity after a zero reading has been taken on a master flat surface.

♦ ♦ ♦

High-conductivity carbon electrodes are superior to standard carbon electrodes in current-carrying capacity, but are not comparable to graphite, according to a recent investigation. Tests indicate that a 7-inch graphite electrode is approximately equivalent to a 12-inch ordinary carbon electrode. Based on a maximum surface temperature of 932 degrees Fahr. graphite electrodes have a permissible current density of 143 amperes per square inch; high conductivity carbon, from 65 to 72 amperes; and, ordinary carbon, from 48 to 49 amperes per square inch. The losses per foot of electrode assembly range from 2.6 to 4.2 kilowatts, the report shows.



LOSS of heat radiated from uninsulated open-hearth furnace roofs, which have been eroded to a thickness of 6 inches, amounts to approximately 10 per cent of the aggregate fuel input. By insulating the furnace roof the radiation losses are reduced to 2½ per cent.

♦ ♦ ♦

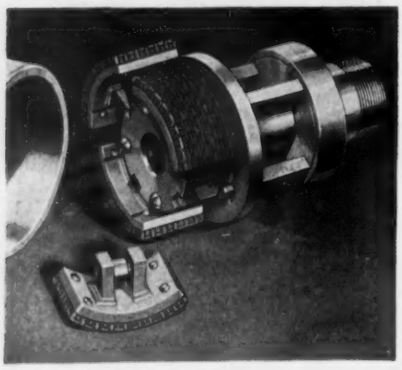
Finishing patterns and forging dies may be facilitated by the use of a recently marketed high-speed electric grinder. It has a spindle speed of 50,000 revolutions per minute without vibration and permits the use of grinding wheels from 5/64 to ⅝-inch diameter. Extremely small radii can be ground with great accuracy.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Coupling Employs Centrifugal Force in Operation

Falk Corp., Milwaukee, recently introduced a new coupling, shown herewith, which starts, couples, cushions and limits the load. The unit functions primarily as an automatic starter, centrifugally operated. Essentially, the construction involves two drum-shaped members, one attached to the driving shaft and the other to the driven shaft. Between driving and driven members are inserted two sets of floating segments, made of brake lining reinforced with lead, the amount of lead being calculated to give the required centrifugal pressure for carrying the load. Outer segments are actuated by the driving member; the inner segments by the driven member.



Falk-Rawson coupling embodies two drum-shaped members

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Wear-Resistant Inserts Made Of Tungsten Carbide

Carboloy Co. Inc., 2481 East Grand boulevard, Detroit, announces that the latest use of Carboloy cemented carbide is its application as wear-resistant inserts on hydraulic valve stems and seats. By tipping these parts at their wear points with the material accurate pressure control is provided over long periods of interrupted use, less maintenance expense incurred and replacement costs reduced.

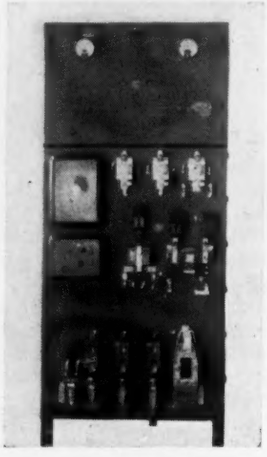
Cemented tungsten carbide is applied by brazing a small piece or blank to the wearing section of the shank. On the valve stem Carboloy replaces the steel at the point-end only; on the valve seat a ring of the material occupies the section which the valve stem contacts.

◆

Synchronous Motor Controllers Embody New Features

General Electric Co., Schenectady, N. Y., is introducing a new line of synchronous motor control units, typical of which is the full voltage, magnetic controller for low voltage applications, shown herewith. Included in this control equipment are relays for automatically applying and removing field excitation and for protecting the stator and amortisseur windings under all operating conditions.

The new relay known as the slip-frequency field application relay is provided. When the motor reaches a predetermined speed near synchronism the time interval between half-waves of current is sufficient to allow the relay to drop out and apply field. By a simple adjustment the time setting of the relay can be varied so that it will apply field at any predetermined speed from 92 to 99 per cent of synchronous speed.



Typical G. E. synchronous motor controller

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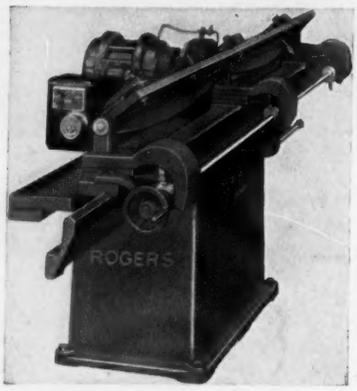
Automatic Knife Grinder Has Time Clock Control

Samuel C. Rogers & Co., 191-205 Dutton avenue, Buffalo, recently designed a new type M automatic knife grinder with electric time clock control and reversible motor and grinding wheel. The unit shown herewith, is made in four sizes and for light shear blades, paper, veneer, scraper knives, etc.



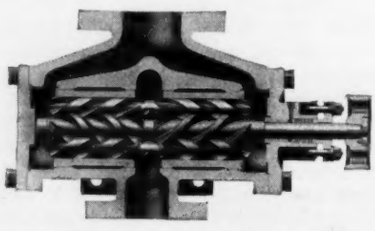
Rogers automatic knife grinder is completely motorized

By means of the timing device, the grinding operation including cross feeding and table traverse is controlled automatically. At the end of each table traverse or stroke the rotation of the grinding wheel instantly reverses. An 8-inch diameter by 3½-inch special cup grinding wheel is employed. For grinding hollow or concave bevels the motor carrying the wheel can be swiveled quickly and easily to the proper angle.

◆

Displacement Pumps Supply Constant Pressure

De Laval Steam Turbine Co., Trenton, N. J., recently placed on the market a line of turbine and motor-driven rotary displacement pumps for oil burners. The pump of the direct-connected unit is of the single end, single suction type, with all thrust in hydraulic balance; while that of the turbine-driven geared unit is of the balanced opposed rotor type as shown in



De Laval double end, single suction pump with balanced rotors

• The standard of quality demanded by exacting steel users

WEIRTON quality is the result of complete ownership control of raw materials from mines to finished product—latest processes—large staff of metallurgists, engineers, designers and highly trained labor bent on building confidence with products.

Modern and special equipment now available makes it possible to supply many gauges and grades up to seventy-five (75) inches in width.

WEIRTON STEEL CO.

Division of National Steel Corporation

WEIRTON W. VA.

SALES OFFICES IN ALL PRINCIPAL CITIES

WEIRTON PRODUCTS INCLUDE:

Pig Iron
Open Hearth Steel
Billets—Slabs—Sheet Bars—Skelp
Angles, Beams and Channels
Round, Square and Flat Bars
Rails—Steel Plates—Tie Plates—
Track Spikes
Splice Bars
Reinforcing Bars
Coke Tin Plate
Kanners Special Cokes—
Best Cokes—Charcoals
Lacquered and Coated Tinplate
Tin Mill Black Plate (All Finishes)
Lacquered and Coated Black Plate
Open Hearth Copper Bearing
Terne Plate 8 lb. to 40 lb. coated
Hot and Cold Rolled Strip Steel
and
Strip Steel Sheets
High Finish Sheets
Long Terne Sheets
(Common and Special Finishes
Galvanized, Black and Blue
Annealed Sheets
Corrugated Sheets, V Crimp
Sheets, Roll Roofing
Single Pickled, Full Finished
and Auto Body Sheets
Many gauges and grades up to
seventy-five inches now available
Coke—Tar—Benzol—Toluol—
Ammonium Sulphate

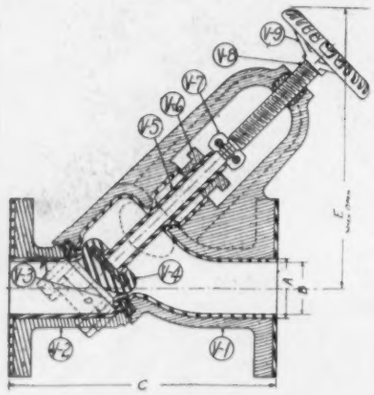
SAVE
WITH STEEL

the accompanying illustration. In the latter, oil is received at the ends of the rotors and delivered from the middle. Inasmuch as there are no timing gears, only one stuffing box is required. Since the power rotor and the two idler rotors are double acting, there is no end thrust, it is claimed.

◆

Rubber-Lined.. Valve Handles Corrosive, Abrasive Liquids

B. F. Goodrich Rubber Co., Akron, O., recently developed a Vulcalock valve designed for handling corrosive and abrasive fluids. This rubber-lined unit, shown herewith, can be changed quickly from a straightway to angle valve or vice versa. The cast iron



Goodrich Vulcalock valve has unique engineering features

body of two-piece Y construction will withstand working pressures up to 150 pounds per square inch. A resiliant rounded disk which snaps over a circular plate at the lower end of the stem provides a seal when brought into contact with the molded rubber-covered seat.

◆

Designs New Light-Duty Electric Drill

Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, recently brought out a new light-duty quarter-inch electric drill. Equipped with ball bearings on both sides of the armature, and with hand-wound and formed coils, the unit is unique in design.

◆

Lathe Machines Round and Out-of-Round Pistons

South Bend Lathe Works, 426 East Madison avenue, South Bend, Ind., is introducing a lathe designed to machine both round and out-of-round pistons. Mechanism of the machine, shown herewith, embodies a cam-forming unit mounted on the lathe

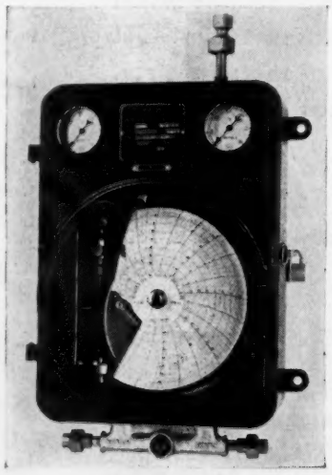
Front view of South Bend cam piston finishing lathe

carriage at the rear of the saddle. This unit is geared to the lathe spindle so that as the spindle rotates, it also rotates a master cam which causes the tool slide to oscillate back and forth according to the throw of the cam, thus turning the skirt of the piston to an oval, ellipse or any other shape desired. Machining is done with a tool tipped with tungsten carbide. The equipment is available in three sizes.

◆

New Controllers Regulate Temperature, Pressure

Bristol Co., Waterbury, Conn., recently placed on the market a new line of time temperature and time pressure controllers for application where it is desired to regulate a temperature on



Bristol free-vane pressure time controller

any range from minus 40 to 1000 degrees Fahr., or pressure from 10 to 2000 pounds. The accompanying illustration shows model 8040 MT, the large cam type. The cam in this unit consists of a graduated chart on sheet aluminum, that may be cut by the user to give any desired control characteristics. The cam is driven by either an electric or spring clock. Air supply and control gages are mounted self-contained and the whole is enclosed in a compact aluminum case.

◆

Develops Drum Controllers For Small Motors

Furnas Electric Co., 1525 South Seventy-Seventh street, West Allis, Wis., recently introduced a new line of drum controllers for reversing fractional horsepower motors. Frames of the new units are formed from heavy

New drum controller introduced by Furnas Electric Co.

gage steel in one piece. Spindle insulation is square bakelite tubing.

These small drums, shown herewith, are designed for use with small bench lathes, but may be used for practically any other application, where it is desired to reverse small motors. They also may be employed for plain starting and stopping where accurate control is an important consideration.

◆

New Platform Scale Is Portable Unit

Kron Co., Bridgeport, Conn., has developed a new portable platform scale. The platform plate does not overhang the suspension loops, permitting heavy loads to be placed on the edges of the platform without disturbing the accuracy of the scale. The levers have no lateral movement. Four-wheel construction is employed, the wheels being made of a combination of bakelite and rubber.

Steel Rate Off a Point as Uncertainties Loom

Coal Labor Difficulties Expected To Be Settled Shortly—Fuel Prices Mount —Deadlock May Develop on Single Price—July Pig Iron Output Up

HANGING over the iron and steel markets is a growing number of uncertainties, including a more aggressive attitude of labor, inability of the industry to see clearly the full effects of the NRA blanket code, and increasing resistance of large consumers to the proposed elimination of concessions on tonnage in the new price program.

Direct results of this situation are a freezing of purchasing and a reduction of one point in the steelworks operating rate to 54 per cent. Whatever buying has been stimulated by the threat of a shortage, such as basic pig iron, has not as yet offset the general curtailment.

Although some steel producers came up to the end of last week with only a few days supply of coal, it was expected the labor difficulties in the western Pennsylvania fields would be settled speedily, probably accompanied by a general increase in fuel prices, already reflected in coke.

Unless actual consumptive demands improve substantially soon a deadlock is promised on the issue of abolishing preferential prices. Already an exception has been made, as it appears that large consumers in the Chicago district will be quoted the Pittsburgh base by Chicago mills, but small users will continue to pay the $2 a ton differential. Stability of the steel price structure is dependent to an important extent on early adoption of the industry's code.

In the meantime there is a tendency to apply quantity extras to the smallest purchases. More producers have adopted differentials for steel bars and shapes in lots of three tons or less, and are extending these to plates and structural shapes. Differentials also have been put in effect for small orders of railroad spikes and tie plates. Prices generally continue to show an upward trend. Cold-finished steel bars have been raised $5 a ton. Further increases are noted in raw materials, principally furnace coke, refractory brick and manganese ore.

Nothing has occurred to destroy steelmakers' expectations of a fall upturn, based largely on improved purchasing power for miscellaneous products, public works, and railroad requirements. Structural awards for the week were down to 5882 tons, though the public works administration at Washington allocated the first billion of its three billion dollar program. Award of 34 war vessels calls for approximately 77,000 tons of steel.

Railroad repair work continues to expand. Boston & Maine is to rebuild 500 steel cars in its own shops. General Chemical Co., New York, has awarded 100 tank cars. July orders for freight cars totaled 306, compared with 25 in the month last year. Nickel Plate has released 3000 tons of rails. Ford's decision not to shut down this month will greatly mitigate the seasonal reduction in automobile production.

With a net gain of 15 active blast furnaces in July, 105 out of the country's 289 stacks were operating at the close of the month, 67 more than in March. Daily output for the month averaged 58,108 gross tons, 37.8 per cent more than in June, and the highest since May, 1931. Total output for the month, 1,801,345 tons, was 536,392 tons or 42.4 per cent over June. In the seven months this year, blast furnaces produced 6,246,095 tons, 511,353 tons more than in the comparable period last year.

Steelworks operations last week dropped 22 points to 55 per cent at Birmingham; 14 points to 76 in New England; 6 points to 57 at Buffalo; 4 points to 54 at Chicago; 1½ points to 65½ at Youngstown; 1 point to 48 at Pittsburgh; increased 1 point to 43½ per cent in eastern Pennsylvania, and remained unchanged elsewhere.

STEEL's iron and steel price composite this week is unchanged at $30.02; the finished steel figure is up 10 cents to $47.50; while the scrap composite is down 4 cents to $11.58 on an easier market at Chicago.

Composite Market Averages

	Aug. 5	July 29	One Month Ago July, 1933	Three Months Ago May, 1933	One Year Ago Aug., 1932	Ten Years Ago Aug., 1923
Iron and Steel Composite	$30.02	$30.02	$29.81	$28.45	$29.32	$44.87
Finished Steel Composite	47.50	47.40	47.20	45.10	47.46	68.33
Steelworks Scrap Composite	11.58	11.62	10.66	9.23	6.25	15.90

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. **Finished Steel Composite:**—Plates, shapes, bars, hot strip, nails, tin plate pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Aug. 5, 1933	July 1933	May 1933	Aug. 1932
Pig Iron				
Bessemer, del. Pittsburgh	18.26	17.86	16.66	15.76
Basic, valley	16.00	15.60	14.40	14.00
Basic, eastern, del, eastern Pa.	17.19	16.79	15.44	13.85
No. 2 foundry, del. Pittsburgh	17.76	17.36	16.16	15.76
No. 2 foundry, Chicago	17.00	16.75	15.90	15.50
*Southern No. 2, Birmingham	13.00	12.60	12.00	11.00
**No. 2X Virginia furnace	18.75	17.75	17.75	17.81
**No. 2X, Eastern, del. Phila.	17.63	17.28	15.95	14.38
Malleable, valley	16.50	16.10	14.90	14.50
Malleable, Chicago	17.00	16.75	15.90	15.50
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	17.13	16.93	16.03	15.63
Ferromanganese, del. Pittsburgh	87.24	84.44	73.24	73.24

*1.75-2.25 silicon. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	3.00	2.40	1.75	2.00
Connellsville, foundry, ovens	3.00	2.85	2.25	2.90
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00

	Aug. 5, 1933	July 1933	May 1933	Aug. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.81½	1.65	1.65	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.50	1.60
Tank plates, Philadelphia	1.79½	1.49½	1.49½	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.65	1.75	1.55	1.70
Sheets, No. 24, hot ann., Pitts.	2.25	2.25	2.00	2.15
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.70	2.80
Sheets, No. 10 blue anneal., Chi.	1.95	1.95	1.75	1.85
Sheets, No. 24 hot ann., Chicago	2.40	2.40	2.20	2.35
Sheets, No. 24 galvan., Chicago	3.00	3.00	2.85	3.00
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	2.10	2.05	1.85	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$13.75	12.70	11.65	8.55
Heavy melting steel, eastern Pa.	12.00	10.55	9.00	6.37½
Heavy melting steel, Chicago	10.50	10.45	8.70	5.40
No. 1 wrought, eastern Pa.	13.00	11.60	10.25	6.25
No. 1 wrought, Chicago	10.35	10.20	8.10	4.50
Rails for rolling, Chicago	11.25	11.15	10.25	6.50

Sheets

Shipments to Automotive and Other Consumers Still Brisk—New Buying Is Slower

SHEET PRICES, PAGE 49

Pittsburgh — Both bookings and shipments of sheets by mills in this district last week were at a rate practically unchanged from that of late July. Rush deliveries still are asked by automotive buyers on material already placed. Sellers are quoting present prices through the entire third quarter, in general, although a few mills refuse to quote beyond August. The prices generally done call for 2.25c on black sheets, with 2.85c, base on 24 gage galvanized. Asking prices on autobody sheets are 2.60c for No. 20 gage. Blue annealed continue in fairly brisk demand at 1.65c, base Pittsburgh for No. 10 gage.

Cleveland—Some sheet mills expect their August shipments will be as heavy as those of July, based on specifications in hand, mainly from the automotive industry. Little change is noted in mill operations here and in an adjacent lake district. Pressure for quick delivery has not relaxed, and for the first time in years it is reported "chasers" are employed in getting material through from mills to consumers. New buying, however, has diminished. Offers of black sheets at 2.15c to 2.20c and No. 20 automotive at 2.50c for the remainder of third quarter, still are noted, though some mills are holding to 2.25c and 2.60c, respectively.

Chicago—Sheets continue among the most active of steel products from the standpoint of sales, shipments and backlogs. Production is heavy and mills are assured of good schedules for several weeks ahead. Sustained automotive demand aids the outlook while miscellaneous consumers continue to take material in good volume. Little change is noted in orders from farm implement manufacturers. Prices are not expected to receive a thorough test until later in the quarter.

Boston—New buying has declined, but several industrial users of sheets continue to take fair shipments on previous contracts. Jobbers, who did not cover through the quarter, are expected to order some requirements shortly.

Philadelphia—Apart from continued good specifications from autobody builders here, sheet demand is featureless. Prices appear steady at 2.85c, Pittsburgh, on galvanized sheets; 2.25c, on black; and 1.65c, on No. 10 hot rolled, with the delivered price here on carlots taking a 35 cent freight rate.

Hendrick Mfg. Co., Carbondale, Pa., is low on the entire lot of 18-8 sheets, rectangular rolled diamond or raised, for flooring on four cruisers now under construction at Brooklyn, Philadelphia, Mare Island and Puget Sound.

New York—Sheet tonnage is moving on contracts, but new business is lagging. Current prices are steady.

Buffalo—Buffalo district sheet mills continue to operate at 70 to 75 per cent, with no sign of slackening.

Cincinnati—Automotive requirements continue heavy, a principal factor in maintaining the backlogs of sheet mills in this district. Pressure for shipments indicates the material is going directly into consumption.

San Francisco—Bids close Aug. 22 on 195 tons of cold-rolled sheets for the bureau of supplies and accounts, navy, for delivery at Mare Island, Calif.

Birmingham, Ala. — Sheet mills continue active. Labor at sheet mills, as well as in other steel mills, continues to protest against the code filed recently by the industry.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surchage corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.65c
Chi. dist. mills	1.75c
Chicago, del.	1.80c
New York, del.	2.00c
Birm., base	1.80c
Phila., del.	1.96c
St. Louis, del.	1.84c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.80c
Chi. dist. mills	1.90c
Chicago, del.	1.95c
Phila., del.	2.11c
New York, del.	2.15c
St. Louis, del.	1.99c
Birm., base	1.95c
San Fran., c.i.f.	2.27½c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.25c
Chi., dist. mills	2.35c
Chicago, del.	2.40c
New York, del.	2.60c
Phila., del.	2.56c
Birm., base	2.40c
St. Louis, del.	2.59c
San Fran., c.i.f.	2.90c

GALVANIZED No. 24

Pittsburgh, base	2.85c
Chi. dist. mills	2.95c
Chicago, del.	3.00c
Phila., del.	3.16c
New York, del.	3.20c
Birm., base	3.00c
St. Louis, del.	3.19c
San Fran., c.i.f.	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base	2.50c
Gary base	2.60c
St. Louis, del.	2.84c

MILL RUN COLD-ROLLED
No. 10

Pittsburgh, base	1.95c
Chicago, del.	2.10c
Philadelphia, del.	2.26c
New York, del.	2.30c

No. 20

Pittsburgh, base	2.40c
Chicago, del.	2.55c
Philadelphia, del.	2.71c
New York, del.	2.75c

AUTO AND FURNITURE

Pittsburgh, No. 10	2.15c
Pittsburgh, No. 20	2.60c

ENAMELING SHEETS

Pitts., No. 10	2.40c to 2.45c
Pitts., No. 20	2.90c

Tin and Terne Plate

Per 100 lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.90c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.60c
*New York, del.	1.90c
*Phila., del.	1.79½c
*Boston, del.	2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Birmingham, base	1.75c
*Coatesville, base	1.70c
*Sparrows Point, base	1.70c
Pacific Coast, c.i.f.	1.75c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
*Philadelphia, del.	1.81½c
*New York, del.	1.87c
*Boston, del.	2.00½c
*Bethlehem base	1.70c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast ports, c.i.f.	2.10c
Cleveland, base	1.80c
Philadelphia, del.	1.91c
New York, del.	1.95c
*Boston, del.	2.00½c
Pitts., cold finish	1.70c
Pitts., forg. qual	1.75 and 1.85c

RAIL STEEL

Pitts., Buff.	1.50c
Chicago, base	1.50c
Eastern mills	1.50c

IRON

Chicago, base	1.60c to 1.70c
*Philadelphia, del. eastern mills	1.60c
Pitts., refined	2.70c to 4.20c

REINFORCING

New billet steel, Chi., Pitts., Buff., Cleve., Birm. (cut lengths)	1.75c
Chicago, rail steel	1.50c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher; joint carloads up 20 cents; less carloads up 30 cents. Nail extras subject to 10 per cent discount on straight or mixed carload shiped to single consignee.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$2.10
Cement coated nails	2.10
Galvanized nails	3.60

(Per pound)

Polished staples	2.80c
Galvanized fence staples	3.05c
Barbed wire gal.	2.60c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$55.00

(To Manufacturing Trade)

Plain wire, 6-9 ga	2.10c
Spring wire	3.10c

Anderson, Ind., and Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

*10,000 to 19,999 lbs.	1.95c
*20,000 to 59,999 lbs.	1.90c
*60,000 to 99,999 lbs.	1.85c
*100,000 lbs. and over	1.82½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅜ to 1½-inch	2.50c
1⅝ to 1⅞-inch	2.20c
2⅛ to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

*Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.65c
Do., Chicago	1.70c to 1.75c
Do., del. Phila.	2.01c to 2.06c
Do., del. N. Y.	2.05c to 2.10c
Cooperage hoop, Pittsburgh	1.75c
Do., Chicago	1.85c
Cold-rolled strip Pitts., Cleve.	2.25c
Worcester, 3 tons or over	2.45c

Rails, Track Material

Stand. rails, mill	$40.00

Relaying rails,

* Pitts., 20-45 lbs.	$23.00
* 50 to 75	$20.00
80 to 100	$23.00 to 24.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, boat, Pitts.	2.65c
Pitts.	2.65c
Track bolts, Chi.	3.50c
Tie plates, Pitts.	$38.00
Tie plates, Chi.	$38.00

Base, railroad spikes 200 kegs or more; base tie plates, 20 tons or more; differentials for less.

Rivets, Wrought Washers

Struc. c.l., Pitts-Cleve.	2.50c
Struc., c.l., Chi.	2.60c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 5 off
Washers, c.l., Pitts. dist.	7.35 off
Do., Chi. dist.	7.00 to 6.75 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	73 off
Rolled thread, ½ x 6 and smaller	73 off
Eagle list	73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	73 off
Tire bolts	60 off
Stove bolts, 72½-25-10 off in pkgs.; 85 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller, 73 off.	

NUTS

Semifinished	73 off

HEXAGON CAP SCREWS

Milled	85 off
Upset 1-in., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	80 off
Upset, larger than 1-in.	80 off
Headless set screws	75-10 off

Cut Nails, Piling

Cut nails, Pitts.; (10% discount on size extras)	$2.65
Do., less carloads, 5 kegs or more; no discount on size extras	$2.90
Do., less than 5 kegs; no discount on size extras	$3.05
Steel piling, Pitts.	1.90c
*Steel piling, Buff.	2.00c
*Steel piling, Chi.	2.05c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

Steel

In.	Blk.	Gal.
¼ and ⅜	57	38½
½	62	50½
¾	65½	55½
1—3	67½	58½

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel

2	63½	54½
2½—3	66½	57½
3½—6	68½	59½
7 and 8	67½	57½
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

(Please turn to next page)

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932, except Buffalo del. at Boston. Asterisk denotes price change.

LINE PIPE

Steel

⅛-inch, butt weld	50½
¼—⅜, butt weld	56
½, butt weld	61
¾, butt weld	64½
1—3, butt weld	66½
2-inch, lap weld	62½
2½—3, lap weld	65½
3½—6, lap weld	67½
7—8, lap weld	66½
9—10, lap weld	66
11—12, lap weld	65

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

BOILER TUBES

C. L. Discounts, f.o.b., Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3¾	50	3	17
4	52	3¾—3½	18
4½—6	42	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts, same as for hot rolled below. Charcoal Iron—Under 10,000 pounds; 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

Cold Drawn

2—2¼	27	3¼—3½	44
2½—2¾	34	4	46
3	41	4½, 5, 6	36

(On 1—1¾-inch sizes mechanical tubing discounts apply.)

Hot Rolled

2—2¼	33	3¼—3½	50
2½—2¾	40	4	52
3	47	4½, 5, 6	42

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs. 40%
15,000 ft. or 22,500 lbs. 70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm. $35.00-36.00
4-in., Birm. 38.00-39.00
4-in. Chicago 46.40-47.40
6 to 24-in. Chicago 43.40-44.40
6-in. & over, N. Y. 32.00-34.50
4-in. New York 34.50-36.50

Class A pipe $3 over Class B.
Stand. fitgs., Birm. base..$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Pig Iron

Per Gross Ton

FOUNDRY NO. 2

Chicago, furnace	$17.00
Pitts., dist. fur.	17.00
Pittsburgh, del.	17.63-18.13
Valley furnace	16.50
Cleve. fur., loc. del.	16.50
Philadelphia, del.	17.26
Virginia furnace	17.25
Granite City, Ill.	17.00
St. Louis, del.	17.85
Buff., fur., local del.	17.00
Buff., all-rail. Bost.	20.05
Buff., del. Brook.	18.77
Buff., del. Newark.	17.89
Ala., Birmingham.	13.00
Ala., del. Chicago.	17.16
Ala., del. St. Louis.	17.35
Ala., del. Cincinnati	17.51
*Ala., Phila., dock.	18.12-18.37
*Ala., Balt., dock del.	18.12
*Ala., N. Y. dock.	18.62
*Ala., Bost. dock del.	18.62-18.87
Tenn., Bir. base	14.00
Tenn., del. Cinci.	17.51
Montreal, del	22.00
Eastern, del. Phila.	17.76

FOUNDRY NO. 2X

Buff., fur., local del.	17.50
Buff., del. Brook.	19.02-19.27
Do., Newark	18.14-18.39
Buff., all-rail, Bost.	20.55
Virginia furnace	17.75
Eastern, del. Phila.	17.51-17.76

FOUNDRY NO. 1X

Buff., fur., local del.	18.00
Eastern, del. Phila.	18.01-18.26
Buff., del. Brook.	19.52-19.77
Buff., del. Newark.	18.64-18.89

MALLEABLE

Valley furnace	16.50
Cleve. fur., loc. del.	16.50
Pittsburgh dis. fur.	17.00
Pittsburgh, del.	17.63-18.13
Chicago, furnace	17.00
Buff., fur., loc. del.	17.50
Eastern Pa., del.	18.13-19.91
Granite City, fur.	17.50
Montreal del.	22.50
Toronto, delivered	21.00

BASIC

Pitts., dist. fur.	16.50
Pittsburgh, del.	17.13-17.63
Eastern Pa., del.	17.00-17.25
Buff., fur., loc. del.	16.50-17.00
Montreal, del.	22.00
Valley, furnace	16.00

BESSEMER

Valley furnace	17.00
Pittsburgh fur.	17.50
Pittsburgh, del.	18.13-18.63

LOW PHOS.

Valley fur. stand.	25.00
Phila., standard	25.76-26.79
Copper, bear., E. Pa. furnace	24.00-25.00

GRAY FORGE

Valley furnace	16.25
Pitts., dist. fur.	16.50
Pittsburgh, del.	17.13-17.63

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., or Pittsburgh furnace; 6%—$20; 7—$20.50; 8—$21.00; 9—$21.50; 10—$22; 11—$23.

BESSEMER FERROSILICON

Jackson County, O., or Pittsburgh furnace: 10%—$23; 11—$23.50; 12—$24.00; 13—$24.50; 14—$25.00; 15—$25.50; 16—$26.00.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	8.00- 9.00
Cop-free low phos. 58-65% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50
No. Afr. low phos.	7.00
Swedish basic, 65%	8.00
Swedish lo wphos.	8.50
Spanish, No. Afr. basic, 50 to 60%	7.00
Tungsten, spot, sh. ton unit, duty pd.	$12.00-12.50
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$17.00-18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

*Caucasian, 52-55%	22.00
*So. African, 52%	21.00-22.00
*So. Afr., 49-51%	20.00-21.00
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

*Pa., Ohio, Ill., Ky., Md., Ga., Mo.	$45.00
*Alabama	48.00

Second Quality

*Pa., Ohio, Ill., Ky., Md., Mo., Ga., Ala.	40.00

MALLEABLE BUNG BRICK

*All bases	50.00

SILICA BRICK

*Pennsylvania	$45.00
*Joliet, E. Chicago	54.00
*Birmingham, Ala.	55.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$65.00
Unburned	55.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$45.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar

85 to 5 per cent grade

Washed gravel, duty paid, tide, gross ton	$20.00
Washed gravel f.o.b. Ill., Ky., net ton, carloads	$14.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess, Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.60c

Coke

Price Per Net Ton

BEEHIVE OVENS

*Connellsville fur.	$3.00- 3.50
Connellsville fdry.	3.00- 3.50
Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del,	7.50
Chicago, del.	8.25
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.00
Portsmouth, ovens, Connel. basis	5.00
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd.	82.00
del. Pitts.	87.24
Spiegeleisen, 19-20%, dom., fur., spot†	27.00
Ferrosilicon, 50%, frieght all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	1.04 -1.10
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	3.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	42.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.50 unitage	55.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity.

Bars

Quantity Differentials Are Increased on Wider Range—Navy Takes Large Tonnage

BAR PRICES, PAGE 49

Pittsburgh—The carbon bar base is considerably firmer since the beginning of the month. Large and small buyers alike are being quoted 1.60c, base Pittsburgh, on new business. However, before the Aug. 1 deadline some preferred buyers rushed to enter specifications which will not be entirely cleaned up in August shipments. Some mills are falling in line with the plan some producers have had for some time of quoting lump sum extras for bar orders under 6000 pounds. These new extras are as follows and are a flat charge for the order, not an extra per ton: Lots of 4000 to 6000 pounds, $2 additional; 2000 to 4000 pounds, $4; 1000 to 2000 pounds, $8; and under 1000 pounds, $12. The 4000-6000 pound bracket has been the classification most recently added. Demand for alloy bars seems to be declining in view of the easier automotive demand.

Cleveland — Sales are restricted mainly to small lots, of which there is a fairly good aggregate tonnage, with a single base price of 1.65c, Cleveland, now in effect. Large consumers who previously obtained preferential prices specified liberally before Aug. 1, and shipments will continue to them through this month. A test on the price for large tonnage may not develop until late this month. Meanwhile sellers expect adoption of the steel code to have a stabilizing influence.

Chicago—Soft steel bar producers defer making changes in prices and for the present quotations are on the same basis as during July, with the general market 1.70c, Chicago. Discussion of proposal to eliminate the existing differential of $2 over Pittsburgh base has resulted in a plan to quote 1.60c, Chicago, to a list of preferred consumers and 1.70c, Chicago, to others. This applies to prompt business only, no contracts being entered. Shipments are in fairly good volume, while sales and specifications have been slightly more active recently. No lessening is reported in automotive requirements, but railroads and farm implement manufacturers are supplying little business.

New York—New quantity extras are being quoted on commercial steel bars, with the base price firm at 1.60c, Pittsburgh, or 1.95c, New York, on carlot shipments. Bar specifications have declined since the first of this month, some larger consumers contracting substantially prior to that time at preferetial prices which now no longer prevail. Common iron bars have advanced approximately $2 a ton to 1.60c, nearest basing point, which under the steel code is Jersey City, N. J.

Philadelphia—New quantity extras are being announced on commercial steel bars in quantities of less than 6000 pounds, applying on approval of prices under the new steel code. An increase of $2 on railroad spring steel has been announced, carbon steel now on a base of 1.60c, Pittsburgh, and silico-manganese on the base of 2.25c. Bands are being quoted firmly at 1.60c, Pittsburgh. Common iron bars are now being quoted generally at 1.60c, mill base, an advance in some instances of $2 a ton. Commercial steel bar demand is somewhat less active than a week ago, when sellers who had preferential prices, were getting under cover before the new price policy became effective Aug. 1.

Plates

Award of Naval Vessels Puts Heavy Tonnage on Books—New Quantity Differentials

PLATE PRICES, PAGE 49

New York—Award of 34 naval vessels, bids for which were opened July 26 provides an estimated 77,100 tons of plates, shapes and bars during the building program. Of the total, 21 vessels were awarded to private yards and 13 to navy yards. The steel to be bought by private yards totals about 55,400 tons and that for the navy yards about 21,700 tons. Auxiliary equipment is not included. Newport News Shipbuilding & Dry Dock Co., Newport News, Va., was awarded two aircraft carriers; Bethlehem Shipbuilding Corp., Bethlehem, Pa., one heavy cruiser, four destroyers; New York Shipbuilding Co., Camden, N. J., two light cruisers, four destroyers; Electric Boat Co., New York, two submarines; Bath Iron Works Corp., Bath Me., two destroyers; Federal Shipbuilding & Dry Dock Co., Kearny, N. J., two destroyers; United Dry Docks Inc., New York, two destroyers. The Philadelphia navy yard was awarded one light cruiser and two destroyers; New York navy yard one light cruiser; Portsmouth navy yard, Portsmouth, N. H., two submarines; Norfolk navy yard two destroyers; Puget Sound, Wash., navy yard, two destroyers; Mare Island, Calif., navy yard, two destroyers; Charleston, S. C., navy yard one gunboat.

Pittsburgh—A stronger market is in evidence with 1.60c, base, Pittsburgh, carrying greater firmness than for some time. Buyers and sellers seem loath to negotiate for long term plate requirements with as much uncertainty affecting the fabricators and other users of plates as the mills. American Bridge Co. will build five more barges for American Barge Lines Inc., the latter working on a towing contract for River Terminals Inc., New Orleans. The five barges require about 1300 tons of plates and shapes. This order follows on one of a similar size which American Bridge Co. is working on now for River Terminals Inc. Dravo Contracting Co. began laying bottom plates last week at Neville Island on four steel coal barges being made up for stock. They are 120 x 26 x 7 feet, hopper type.

Cleveland—Platemakers now are quoting 1.60c, base, Pittsburgh, as minimum for the remainder of third quarter. Some also are quoting full standard extras for cutting. Demand has not yet developed a real test. Much depends on how soon the code is adopted. Miscellaneous requirements supply most tonnage, the Cleveland producer increasing its plate mill operations during the week. The Brewing Corp. of America, Cleveland, is in the market for glass-lined tanks, requiring 600 to 700 tons of plates.

Boston—Advance to 1.70c, Coatesville, Pa., has failed to halt improvement in plate buying. Miscellaneous demand holds while railroad, small tank, brewery and industrial requirements give a broader active outlet. Boston & Maine is to repair 500 coal cars, taking a substantial volume.

Chicago—Tank work is receiving its best support from breweries, with oil companies and municipalities doing little buying. Premier-Pabst Corp. has placed 450 tons for a new brewery at Peoria, Ill. Chicago has

placed a scow involving 150 tons. Better demand from the oil industry is anticipated after completion of the federal program on oil conservation. Plates are unchanged at 1.70c, Chicago.

Philadelphia—Following the improvement in specifications which took place prior to the advance to 1.70c, Coatesville, Aug. 1, plate tonnage has tapered. Placing of construction contracts on the navy vessels on which bids were opened July 26 will provide some 77,000 tons of steel for mills. The Publicker Alcohol Co., Philadelphia, has closed on 250 tons of tank work.

Contracts Placed

450 tons, brewery tanks, Peoria, Ill., for Premier-Pabst Corp. to Graver Tank & Mfg. Corp., East Chicago, Ind.

300 tons, cell work for county jail, San Francisco, to Judson-Pacific Co., San Francisco.

250 tons, 18 tanks, Publicker Commercial Alcohol Co., Philadelphia, to Chicago Bridge & Iron Works, Chicago.

180 tons, plates and shapes, steel storage bins, Tonawanda, N. Y., to Ernst Iron Works Inc., Buffalo.

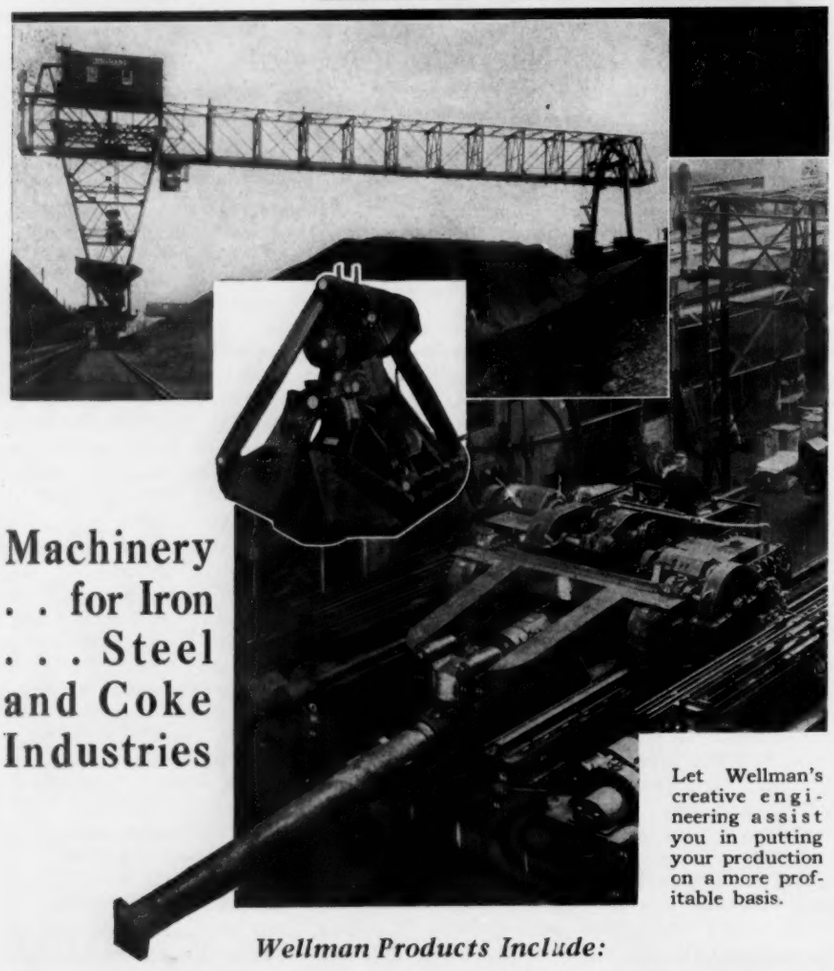
150 tons, plates and shapes, scow, city of Chicago, to Graver Tank & Mfg. Corp., East Chicago, Ind.

Unstated tonnage, high pressure gates and conduit lines, tunnels 2 and 3, Boulder Dam, Colo., to Joshua-Hendy Iron Works, Sunnyvale, Calif., $105,989; bids July 20.

Contracts Pending

211 tons, medium steel plates, bureau of supplies and accounts, navy, Mare Island, Calif.; bids Aug. 29, schedule 517.

WELLMAN



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Wire

Single Price Now in Effect; Backlog Gives Heavy Output

Wire Prices, Page 49

Boston—Wire mill operations hold to the recent high rate with gradual reduction in backlogs as new buying has lessened. While tonnage booked up to Aug. 1 called for shipment by Aug. 15, some of this business will go over. The $5 advance on nails, staples, barbed wire and fence is now effective, but plain wire holds at 2.20c, Worcester.

Pittsburgh—The price for wire products holds with nails $2.10; plain wire 2.10c, fencing $50 and galvanized barbed wire, 2.60c. Heaviest demand at present is in plain wire with automotive parts makers, bolt and nut producers and other heavier tonnage users frequent specifiers. Several lower-priced contracts expired Aug. 1 but there has been little test of the market.

Cleveland — Makers generally quote firm single prices for wire and wire products for the remainder of third quarter. However, material is being shipped this month on specifications released late in July against preferential prices. Until the steel industrial code goes in effect, some producers say they will meet competition if necessary to hold their trade. Current sales are in small lots.

Chicago—Decline in specifications for wire and wire products is moderate, while shipments also show only a small decrease from previous weeks. Demand for manufacturers' wire continues relatively more active than for wire products, though producers anticipate a substantial recovery in purchases in farm areas during fourth quarter. Automotive needs remain heavy and so far have shown little slackening. Prices are steady with $2.15 for carload lots of wire nails and 2.15c for plain wire quoted over the balance of this quar-

Check

THESE FEATURES OF ELECTRIC WELD PIPE

against any other pipe

- 100% WELD ✓
- LONG LENGTHS ✓
- PERFECTLY ROUND ✓
- CLEAN INSIDE AND OUT ✓
- UNIFORM WALL THICKNESS ✓
- STRAIGHTNESS ✓
- FINE FOR EVERY TYPE OF JOINT ✓
- ANY DEGREE OF STRENGTH OR DUCTILITY ✓

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Certainly most pipe has a dependable weld, but Republic Electric Weld is 100 per cent. Some pipe can be had in long lengths—Electric Weld is made up to 50 feet. And as you check the features of this better pipe you will find that while other makes possess some of them, only Republic Electric Weld can honestly claim to have them all.

And it's all in the way it's made. Clean strip is formed cold to a perfect round. The seam is welded by electrical resistance where the edges meet. No metal is added at the weld and the grain structure is virtually the same at the weld as at any other point in the pipe wall. No furnaces to cause scaling. No heating of the entire mass of metal to make it out of round. No long cooling to jeopardize its straightness.

Before you buy pipe check into the advantages that Republic Electric Weld Pipe will bring to your particular work—find out how it will save you time and money. Write for a copy of "Electric Weld Pipe." A reading is convincing.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

REPUBLIC
ELECTRIC WELD
LINE PIPE • CASING • TUBING

Structural Shapes

Fabricators Now Bidding with Firm Minimum of 1.60c for Plain Material — Releases on Contracts at Pittsburgh Fairly Heavy—10,000 Tons Up for Dams

STRUCTURAL SHAPE PRICES, PAGE 49

Pittsburgh—Releases on old contracts are fairly heavy, but a slowing is evident on new projects coming out for figures. The Homestead, Pa. works of Carnegie Steel Co. is rolling a fair-size tonnage for the San Francisco-Oakland bridge. The base price of structural shapes at 1.60c is the firmest in some time, with all buyers regardless of size paying this figure on all new business entered since Aug. 1. Steel sheet piling remains 1.90c, Pittsburgh; 2.00c, Buffalo, or 2.05c, Chicago.

Cleveland—Fabricators now are bidding with the single price of 1.60c, base, Pittsburgh, for plain material. For a building here for the Brewing Corp. of America approximately 500 tons of shapes are about to be awarded by the general contractor. Several bridge jobs requiring substantial tonnages are up in western New York.

Chicago—Shape awards are few and in small lots. Low bidders have been announced on two Illinois bridges requiring 2800 tons, while bids are to be taken shortly on a Des Moines, Iowa, postoffice requiring 1000 tons. Steel requirements for various public works projects are expected to appear within the next four to eight weeks. For lock and dam construction on the Mississippi river between St. Louis and St. Paul, it is estimated that around 10,000 tons of piling will be required. Plans now are being prepared for this work for which federal financing has been approved.

New York—Structural steel demand continues sluggish. Federal government work is developing slowly and comparatively little of this business is expected to reach the steel mills until late in the year. Bridge inquiry is heavier, New York state closing this week on projects taking 1100 tons. Railroad grade crossing programs, expected to go ahead later, will require substantial structural tonnage. Plain material at 1.70c, eastern mill, has been subjected to little test.

Philadelphia—Placing of several relatively small building contracts featured the local structural market during the past week. The proposed courthouse to be erected here, involving 5000 to 6000 tons, probably will not become active for several months. Effective Aug. 1, the Pencoyd, Pa., base on shapes was eliminated, leaving Bethlehem, Pa., as the sole eastern basing point. At that time also the base price was advanced $2 a ton, to 1.70c.

Contracts Placed

10,000 tons, additional to 18,000 tons reported last week as placed for Boulder Dam—Los Angeles transmission towers with Tower Builders Inc., Los Angeles. Of total 28,000 tons, 23,000 tons were placed with Tower Builders; 5000 tons with McClintic-Marshall Corp., Bethlehem, Pa.

800 tons, Jewish Memorial hospital, New York, to Norton Steel Co., New York; H. R. H. Construction Co., general contractor.

715 tons, highway bridge, Suply, Okla., to Pittsburgs-Des Moines Steel Co., Des Moines, Iowa.

420 tons, textile mart, Charlotte, N. C., to Southern Engineering Co.; Goode Construction Co., Charlotte, general contractor.

365 tons, bridge, Smithfield street, Pittsburgh, to Fort Pitt bridge Co., Pittsburgh. Bridge floor to Aluminum Company of America.

325 tons, state bridges, Chandler and Meeker, Lincoln county, Oklahoma, to Missouri Valley Bridge & Iron Co., Leavenworth, Kan.; J. W. Hoffer, Oklahoma City, general contractor. Carter-Waters Corp. awarded reinforcing bars.

315 tons, Yuengline brewery, Pottstown, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.; through Sinclair & Grigg, Philadelphia, general contractors.

232 tons, science and library building, Loyola high school, Baltimore, to Ditrich Bros., Baltimore; through Northeastern Construction Co.

230 tons, bridge, Boston & Maine railroad, Everett, Mass., to Boston Bridge Works, Cambridge, Mass.

200 tons, state bridge, Tallahatchie county, Mississipi, to Virginia Bridge & Iron Co., Birmingham, Ala.

200 tons, building, Ohio Salt Co., Wakeman, O.; Berger Iron Works, Canton, O., awarded general contract; Bethlehem Steel Co. shapes specified.

180 tons, building, Peterson Tallow Co., Oakland, Calif., to Herrick Iron Works.

175 tons, grade separation, Kenosha, Wis., for North Shore line, to Hansell-Elcock Co., Chicago.

150 tons, hosiery mills, Berwick, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.; though A. J. Sordoni Co.

150 tons, bridge No. 31, Lebanon county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem; through M. & J. B. McHugh, Philadelphia, general contractors.

150 tons, bridge No. 18, Lebanon county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem; through Walter H. Drawbaugh, Dover, Pa., general contractor.

145 tons, Peerless Brewing Co., Philadelphia, to Belmont Iron Works, Philadelphia.

125 tons, warehouse, Milwaukee, to G. Hennecke Co., Milwaukee.

125 tons, Pennsylvania grade crossing elimination, Springbrook, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

120 tons, bridge, Essex county, New York, to Phoenix Bridge Co., Phoenixville, Pa.; through Louis Longhi & Son, Torrington, Conn.

115 tons, piling, waterworks, Boone, Iowa, to Inland Steel Co.

110 tons addition, building 5, James Peck Co., Cloquet, Minn., to Minneapolis-Moline Co., Minneapolis.

105 tons, brew house for Horluck Brewing Co., Seattle, to Wallace Bridge & Structural Steel Co., Seattle.

100 tons, buildings, negro hospital, St. Louis, to Columbia Iron Works, St. Louis; Murch Bros. Construction Co., St. Louis, general contractor.

100 tons, state bridge, Perry county, Kentucky, to Vincennes Bridge Co., Vincennes, Ind.

100 tons, building, Federal Mill & Elevator Co., Lockport, N. Y., to R. S. McManus Steel Construction Co., Buffalo.

100 tons, addition, brewery, P. Ballantine & Co., Newark, N. Y., to H. R. Goeller Inc., Hillside, N. J.; E. M. Waldron Inc., Newark, general contractor.

Shape Awards Compared

	Tons
Week ended Aug. 5	5,882
*Week ended July 29	34,575
Week ended July 22	7,552
This week in 1932	13,390
Weekly average, 1932	14,285
Weekly average, 1933	15,062
Weekly average, July	15,809
Total to date, 1932	498,000
Total to date, 1933	481,991

*Revised

Contracts Pending

10,000 tons, piling, locks and dams, Mississippi river between St. Louis and St. Paul; plans being prepared in accordance with public works program.

1500 tons, bridge, Justice Park, Ill.; American Bridge Co., Pittsburgh, low.

1500 tons, building, United States Narcotic farm, Lexington, Ky.; Worsham Bros., Knoxville, Tenn., and Great Lakes Construction Co., Chicago, low.

1300 tons, bridge, Morris, Ill.; McClintic-Marshall Corp., Bethlehem, Pa., low.

1100 tons, state highway bridges, New York; bids Aug.11.

1000 tons, postoffice, Des Moines, Iowa; bids Aug. 16.

550 tons, highway bridges, Pavillon and Belvidere, N. Y.

500 tons, approximate, building, Brewing Corp. of America, Cleveland; general contract to Sam W. Emerson Co., Cleveland.

400 tons, Roanoke river bridge, Mecklinburg, Va., for state highway de-

partment, Virginia.
400 tons, highway bridges, Indiana and Kentucky.
310 tons, transmission towers, Port Washington, Wis., for Milwaukee Electric Railroad & Light Co., Milwaukee.
300 tons, grade crossing, Erie railroad, Elmira, N. Y.
227 tons, Broadway tunnel, Oakland, Calif.; plans completed.
200 tons, bridge, New York, New Haven & Hartford railroad, Saybrook, Conn.
170 tons, state bridge, Deer Creek, Bel-air, Md.
155 tons, bridge, Willamette National Forest, Oregon; Tom Lillebo, Reedsport, Oreg., general contractor.
150 tons, building, Ferrysburg, Mich.
125 tons, addition postoffice, Grand Forks, N. D.; Standard Construction Co., Minneapolis, low.
125 tons, bridge, Pennsylvania railroad, Spring Brook, N. Y.
100 tons, building, Granite City, Ill.
100 tons, postoffice, North Hollywood, Calif.; K. E. Parker Co., San Francisco, low.
1174 tons, Los Angeles; specification 3173; bids Aug. 2.
850 tons, tunnel, for Pennsylvania railroad, Baltimore; bids asked; Arundle Corp., Baltimore, general contractor.
312 tons, passenger station and terminal facilities, Southern Pacific railroad, Houston, Tex.; Nathan Wohlfield, Dallas, general contractor.
300 tons, highways and bridges, Maine.
280 tons, substructure, Justice Park, Ill., bridge; Owen Engineering Co., Chicago, low on general contract.
100 tons, waterworks department, Cleveland; bids in.

Concrete Bars

Awards Are Lighter, with Little Public Work to Support Demand—Pennsylvania Railroad Releasing Some Tonnage for Philadelphia Improvements—Tone Firm

REINFORCING BAR PRICES, PAGE 49

Philadelphia—At least one mill is announcing a flat 1.60c, Pittsburgh, price on reinforcing bars in mill lengths, with the differential to distributors eliminated. Distributors are expected shortly to announce a schedule of cutting, forming and engineering charges in a code which will supplement the steel code. The Pennsylvania railroad is releasing specifications against old contracts on its west-side development. It was estimated at the time the work was held up that approximately 2000 tons were yet to be released on existing contracts and that an additional 2000 tons would have to be purchased later.

Pittsburgh—New billet steel bars for reinforcing purposes remain quoted at 1.75c, Pittsburgh, on cut lengths. Rail steel bars continue 1.50c, Pittsburgh. Small jobs dominate.

Cleveland—Concrete bar awards are light. The state has awarded general contracts for several bridge and road jobs requiring substantial tonnages. Cleveland has taken bids on 100 tons in connection with water-main extensions.

Chicago—While large lots of concrete bars will be included in public works construction now getting under way, producers so far have received but few inquiries or orders. Shipments against old contracts for road work in this district usually involve only small lots. Pending work includes several hundred tons for Illinois bridges.

New York—Pending concrete bar requirements are heavier, notably for highways and bridges, but current buying is light. On small-lot business 1.75c, Pittsburgh and Buffalo, for cut lengths, holds fairly well, this price being still uncertain on tonnage.

Contracts Placed

500 tons, court house, Kansas City, Mo., to Sheffield Steel Corp., Kansas City; Swenson Construction Co., general contractor.
320 tons, buildings, negro hospital, St. Louis, to Laclede Steel Co., St. Louis; Murch Bros. Construction Co., St. Louis, general contractor.
230 tons, Panama, to Gulf States Steel Co., Birmingham; bids July 27, schedule 2886.
200 tons, building, Best Foods Inc., Bayonne, N. J.; to Truscon Steel Co., Youngstown, O.
150 tons, stream control, lower Bills Brook Dam, Farmington river, Barkhamsted, Conn., to Concrete Steel Co., New York; C. and R. Construction Co., Boston, general contractor.
100 tons, King county, Washington, paving jobs, to Pacific Coast Steel Corp., Seattle.
100 tons, state highways, Queens county, New York, to Kalman Steel Corp., Bethlehem, Pa.; through Kantrowith Construction Co.
100 tons, highway, Grand Central Parkway, Queens county, New York, to Concrete Steel Co., New York.

Contracts Pending

2210 tons, Broadway tunnel, Oakland, Calif.; plans completed.

Concrete Awards Compared

	Tons
Week ended Aug. 5	1,700
Week ended July 29	10,825
Week ended July 22	3,724
This week, 1932	3,270
Weekly average, 1932	3,920
Weekly average, 1933	3,321
Weekly average, July	5,282
Total to date, 1932	133,713
Total to date, 1933	106,271

Strip

Activity Is Less Marked; Users Ask Prompt Shipment

Strip Prices, Page 49

Pittsburgh—A large order for strip steel, both hot and cold-rolled, has been entered by a mill here from a buyer in Detroit. Immediate shipment is requested to cover the buyer's August requirements. The market is slightly less active than through late June and early July, but there is a strong undertone and buying continues widely representative. Many miscellaneous accounts specify frequently for both hot and cold-rolled. The price is stronger and 1.65c, governs all inquiries and new business not under contract. Lower-priced hot-rolled strip contracts are gradually expiring. The same is true in cold-rolled where a minimum of 2.25c, Pittsburgh, is firm on new business.

Cleveland—Hot-rolled strip now is quoted on the single base of 1.65c, Pittsburgh, for the remainder of third quarter, the 1.60c price recently quoted by some makers having been withdrawn. Cold-rolled strip is firm at 2.25c, base, Cleveland. Shipments on contracts are well sustained. Current buying by automotive interests is limited mainly to fill-in lots. Demand for cooperage stock is fairly good.

Chicago — Strip specifications are off slightly but shipments are steady, aided by fairly substantial backlogs. Automotive needs are holding well. Producers look for little test of prices until late this quarter when business placed prior to recent advances will have been worked off. Hot-rolled strip usually is quoted 1.75c, Chicago, wtih cold-rolled material 2.25c, Pittsburgh-Cleveland.

Philadelphia—Strip specifications are less active, thus giving an opportunity to some producers to catch up on deliveries. Several producers have been over-scheduled. Hot strip is steady at 1.65c, Pittsburgh and cold strip at 2.25c, Pittsburgh, plus 35 cents per 100 pounds for freight rate on carlots.

Pipe

Municipalities Applying for Loans to Carry Out Projects—Standard Pipe in Fair Demand

PIPE PRICES, PAGE 49

Pittsburgh—Standard pipe still is in fair demand but oil country goods show practically no life. There is good demand from the railroads and several manufacturing plants for boiler tubes. National Tube Co. resumed operations in two idle McKeesport, Pa., mills last week when the No. 1 lap-weld mill and the No. 1 seamless mill resumed with a fair schedule.

New York—New cast pipe inquiry is light. Pending tonnage also is down, with several purchases depending on financing. White Plains, N. Y., is expected in the market soon for about 1400 tons. Prices are unchanged at $35, foundry.

Chicago—Cast pipe producers await the release of orders for projects scheduled to receive federal aid in financing. Application for funds has been made by a fairly large number of municipalities but there is some delay in preparation of plans and formal requests for bids.

Boston—Bids are in on approximately 3500 tons of cast pipe, bulk of the material being for Lowell, Mass., and Providence, R. I.

Cast Pipe Placed

110 tons, 8-inch, Botanical Gardens, New York, to Donaldson Iron Works, Emaus, Pa.

Steel Pipe Placed

Unstated tonnage, 10,000 feet, 3-inch, galvanized iron or steel, Panama, to Central Tube Co., Pittsburgh; schedule 2887, July 28.

Cast Pipe Pending

3000 tons, 20 and 24-inch, Lowell, Mass.; United States Pipe & Foundry Co., Burlington, N. J., low.

650 tons, 6 and 8-inch, water line extensions, Ferndale (Detroit), Mich., also 250,000-gallon tank. To ask 30 per cent federal loan.

333 tons, 1 to 16-inch class 150 Signal Hill, Calif.; bids Aug. 14.

100 tons, small sizes, Torrington, Conn.

100 tons, cast iron water pipe specials, district commissioners, Washington; bids Aug. 10.

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direct arc melting and refining furnaces for tool and alloy steel ingot production, for steel castings manufacture, ... and the making of plain steels as are used in the Lectromelt billet size ingot process for reinforcing bars . . . . have now been made even more rapid and economic by the new patent . . .

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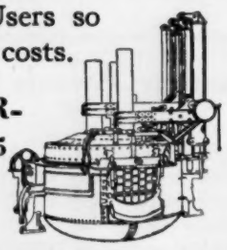

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Bolt, Nut Sales Increase; Railroads Buying Rivets

Bolt, Nut, Rivet Prices, Page 49

Bolt and nut buying picked up through the past week so that the market was improved over the early July period. July gave some makers the largest tonnage in several years. Automotive buying appears to be slightly less. Some fair orders from jobbers continue and the greatest improvement has been shown by railroads. Car repair programs of several carriers have called for some attractive rivet specifications. Prices are steadier and firm. Bolts and nuts hold to 73 off list and large rivets are quoted 2.50c, base, Pittsburgh or Cleveland, and 2.60c, Chicago. Small rivets are 70, 10 and 5 off.

Tin Plate Specifications Assure High Mill Rate

Tin Plate Prices, Page 49

Pittsburgh—Barring the unforeseen, Pittsburgh district tin plate producers should run through all of this month and September at the same rate they are operating today, between 95 and 100 per cent. Mill order books are full and the rate of incoming specifications is not diminished. Mid-October seems to be the earliest deliveries that can be promised by most interests, although one producer claims to be able to make deliveries on all new business by Oct. 1. The price of tin plate is officially unchanged at $4.25 per base box, although tin mill black is stronger at 2.50c, Pittsburgh.

Cold-Finished Advanced

Cold Finished Prices, Page 49

Pittsburgh—Buying was heavy before the Aug. 1 deadline when the base price of cold-finished steel bars was advanced $5 a ton. This now makes the Pittsburgh base quoted 1.95c; Cleveland, Chicago and Buffalo, 2.00c; Detroit, 2.15c; and Eastern Michigan points, 2.20c. Several small sales the past week have tested the new Pittsburgh base of 1.95c. When the steel code is adopted the Detroit and Eastern Michigan basing prices on cold drawn bars will be abolished, according to present expectation.

Railroads

Some Rail Releases Made; Car Repairs Bring Orders

Track Material Prices, Page 49

Nickel Plate has released 3000 tons of rails on its 1932 contract. Chesapeake & Ohio is expected to place a substantial tonnage of rails this month.

One eastern road has placed 3000 tons of plates, shapes and bars for car repairs, with a fair tonnage pending for car repairs by other carriers. Another eastern road will place a few thousand tons of rails soon, in addition to its order earlier in the year.

July orders for cars totaled 306 cars, bringing the total for the first seven months to 872 cars, compared with 384 cars in the corresponding period last year. Comparisons follow:

	1933	1932	1931	1930
Jan.	3	159	100	5,072
Feb.	0	35	50	17,027
March	5	105	2,166	6,118
April	50	0	2,798	1,997
May	8	60	20	13,92
June	500	0	1,910	998
July	306	25	617	1,389
7 Mo.	872	384	7,661	33,993
Aug.		5	1,304	1,111
Sept.		1,298	703	576
Oct.		0	980	4,116
Nov.		2	35	2,621
Dec.		50	11	2,729
Total		1,739	10,694	45,146

The new price on tie plates at $38 per ton applies through third quarter, with the base of 2.40c, mill, on large spikes likewise the market for that period. Shipments on business entered at these figures must be completed no later than Sept. 15. No large inquiries for rails or fastenings are in the market but prospects remain favorable for some important railroad buying to develop late this fall. Railroad repair programs continue active with several carriers in the Pittsburgh district calling additional rolling stock from storage. Repairing of several unused locomotives recently by one railroad there ran to prohibitive figures.

Boston & Maine railroad will rebuild 500 gondola coal cars of 50-tons capacity at its Concord, N. H., shops to require several thousand tons of plates, shapes, bars and other material. The railroad has also reopened its passenger repair shops at Concord.

Car Orders Placed

A. E. Staley Mfg. Co., Decatur, Ill., 21 tank cars to General American Tank Car Corp., Chicago.

General Chemical Co., New York, 100 tank cars, to American Car & Foundry Co., New York.

United Fruit Co., 20 fruit cars, 15 tons capacity, to Pullman Standard Car Export Corp.

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Pig Iron

See Possible Iron Shortage As Outgrowth of Labor Discord in Coal Mining Districts

PIG IRON PRICES, PAGE 50

Pittsburgh—An important integrated steel producer near here was negotiating last week for the purchase of a large tonnage of basic iron. This mill has been seriously short of coking coal as a result of the coal strike in western Pennsylvania, and is considering closing some of its active blast furnace capacity. Otherwise, the market here is quiet with merchant iron business slow although shipments are proceeding at a good rate. Inquiries are developing the full price with $17, Neville Island, applying for foundry grades, $16.50 for basic and $17.50 on bessemer. Valley prices are quoted 50 cents a ton less.

Cleveland — Shipments continue heavy, but new sales are down sharply, a merchant interest booking only 1000 tons during the week. Steelworks furnaces are out of the merchant market. One reason advanced for the light volume of sales is that pig iron producers are already adhering to the terms of their code, and will not quote prices for the fourth quarter prior to Sept. 1. Labor difficulties in Pennsylvania coal fields are strengthening the market, especially for basic iron. The Cleveland foundry and malleable iron price holds at $16.50, furnace, for local and outside shipment.

Chicago—Shipments so far this month show little change from the July rate, which was the best in more than two years. New sales are fairly steady but general activity is expected to moderate. Shipments to automotive interests are holding well but needs of farm implement manufacturers have yet to show an appreciable gain. Some machine tool builders are taking more iron but operations of this industry generally are light. Prices are holding well at $17 for No. 2 foundry and malleable, with silvery grades higher. Scarcities of some grades of the latter are appearing.

Boston—Prices are firm with demand and inquiry light. Buffalo iron is being quoted largely on a delivered basis for fixed areas, which has resulted in some advances, notably in Connecticut. Minimum for Indian iron is $17, dock, part of the recent arrival of about 800 tons having sold slightly higher. Dutch iron, still in good supply, can be bought under domestic brands. Mystic furnace minimum is $17, furnace. Silicon differential premiums tend to balance stocks more evenly.

New York—Contract shipments are brisk, but new buying as yet has not been stimulated by prospects of a possible shortage of iron, resulting from labor trouble in coal fields. Prices are firm.

Philadelphia—Spurred by prospects of labor trouble interfering with shipments, consumers have been releasing specifications heavily against contracts. Shipments for several weeks past have been brisk, with one leading producer shipping more iron in July than in any monthly period since 1929. Southern producers have recently added 12 cents to their selling prices, as a direct reflection of increased conversion costs resulting from new wage rates specified in the steel code. The possibility of another advance in southern wage rates to conform with suggestions brought out at the hearing in Washington last week holds promise of another increase in selling prices. Navy closes Aug. 22 on 224 tons of low-phosphorus iron and 25 tons of charcoal iron for delivery at Washington.

Buffalo—The Hanna Furnace Corp. stack is now on full production, turning out between 600 to 700 tons of merchant iron daily. This output will be doubled shortly when Hanna adds another furnace. The uncertainty of future prices is attracting much attention among buyers, many of whom would gladly cover for the fourth quarter, but books have not been opened and sellers are not disposed to establish quotations for that period and beyond.

Cincinnati—July shipments in this district were about 15 per cent heavier than in June, with current shipping orders well maintained. New business is light. Furnace interests are refusing to extend price protection; in fact, they are studying what effect industrial codes may have on old contracts for iron at fixed price.

Birmingham, Ala. — Sales are in small lots, one to three cars at a time, for early delivery. Base price,

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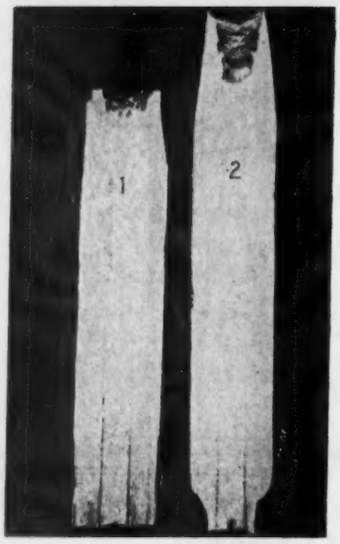

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Philadelphia Chicago

$13, No. 2 foundry, f.o.b. furnaces, is firm. Republic Steel Corp. has blown in its second furnace at Thomas, making ten stacks active in this district. A steady market is anticipated for this month.

Toronto, Ont.—Demand is holding at recent levels. Melters are taking single-car lots for immediate needs, but no contracts are being signed for future delivery. The daily melt is said to be running around 50 per cent, with foundries averaging around 30 per cent. Prices are unchanged.

Coke

Furnace Price Advanced; Mine Strikes Cause Shortage

Coke Prices, Page 50

Unsettled by labor difficulties in Western Pennsylvania coal fields, standard furnace coke has advanced. A leading interest at Pittsburgh holds to $3.50 to $4, ovens, on furnace grade but there are a few smaller sellers willing to take business at $2.75 and $3 on small lots. If the coal strike continues several blast furnaces may be forced to close. A Youngstown, O., mill is reported to have only a few days coal supply ahead, although the two leading Pittsburgh steel producers have three to six weeks supply above ground. Common foundry premium foundry grades of coke hold unchanged, with demand fairly light. Furnace coke has been in the heaviest demand owing to the recent improvement in blast furnace activity.

Foundry coke shipments are steady at Chicago, reflecting sustained operations by most consumers. While the July movement was the heaviest so far this year, the August outlook is rather indefinite. Prices are steady with $7.75 ovens for outside delivery, and $8.25, Chicago delivery, quoted on shipments during August.

Ferroalloy Shipments Hold

Ferroalloy Prices, Page 50

As consumers contracted heavily in June prior to the price advance, new business in ferromanganese continues to lag. Releases have held up fairly well, and shipments are expected to continue good at least for the remainder of this month. The market is $82, eastern seaboard on both spot and contract shipments in carlots. Spiegeleisen, 19 to 21 per cent, is firm at $27, furnace, with contract tonnage moving at the prices that were named at the beginning of this year.

Manganse Ore Advanced

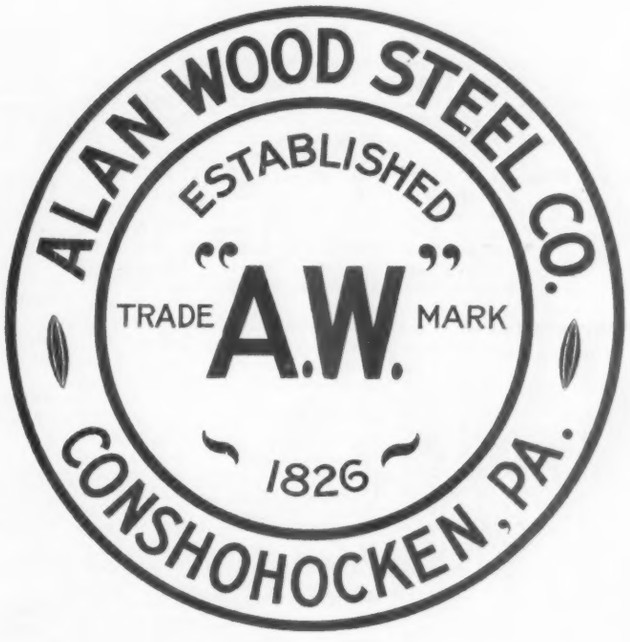
New York—Manganese ore prices have again advanced, Caucasian, 52 to 55 per cent, now quoted 22c, c.i.f. South African ore, 52 per cent is holding 21 to 22 cents, with the 49 to 51 per cent grade at 20c to 21c. Chilean manganese ore, 48 to 49 per cent, and having a low phosphorus content, is being offered at 22.50c, c.i.f. In the main, these prices are nominal, for there is little new buying on which to definitely establish the market.

Commercial and industrial authorities in Japan are planning to subsidize the manufacture of aluminum during the next fiscal year, to encourage its manufacture.

Carbon and Alloy Steels
Blue Annealed Sheets,
Sheared Plates: also Billets.

Rolled Steel Floor Plates
Diamond, Diamondette and Ribbed Patterns

Swede Pig Iron
Rainey-Wood Coke



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Scrap

Prices Hold and Strength Is Shown by Tonnage Sale—Lull In Buying Is in Evidence

Pittsburgh—The market weakened last week after continued absence of important mill buyers from the market. No. 1 heavy melting steel rests quoted at $13.50 to $14, this district. Purchase by the Steel Corp. of 10,000 to 15,000 tons of heavy melting steel at $14, Donora, Pa., equal to $13.75, Pittsburgh, shows strength of the market. Cast scrap is stronger to one delivery point at $10.50 to $11, up 50 cents, although machine shop turnings appear no higher than $10.75, against $11 formerly. The Pennsylvania closed on 15,000 tons last week with the Baltimore & Ohio selling its July accumulation Aug. 7. Steel on the Pennsylvania list brought about $14.

Cleveland—Iron and steel scrap is quiet, shipments on contract being

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.00 to 10.00
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	11.00 to 11.50
Buffalo, No. 2	10.00 to 10.50
Chicago	10.25 to 10.75
Cleve., No. 1	10.50 to 11.00
Cleve., No. 2	10.00 to 10.50
Det., No. 1	9.50 to 10.00
Det., No. 2	8.50 to 9.00
E. Pa.	12.00
E. Pa., No. 2	10.50
Federal, Ill.	8.75 to 9.25
Granite City, Ill.	8.00 to 8.50
N. Y., deal. R. R.	8.00 to 8.50
N. Y., deal. No. 2	7.00 to 7.50
N. Y. deal. yd.	5.50 to 6.00
Pitts., No. 1	13.50 to 14.00
St. L. No. 1 del.	9.00 to 9.50
Valleys, No. 1	13.00 to 13.50

COMPRESSED SHEETS

Buffalo, dealers	9.50 to 10.50
Chi. (Factory)	8.50 to 9.00
Cleveland	10.00 to 10.50
Detroit	9.50 to 10.00
E. Pa. new mat.	11.00 to 11.50
Pittsburgh	13.00 to 13.50
Valleys	12.50 to 13.00

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cincinnati, del.	6.00 to 6.50
Cleveland	8.00 to 8.50
Eastern Pa.	9.00 to 10.00
Pittsburgh	12.00 to 12.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	5.00 to 5.50
Cincinnati	5.00 to 5.50
Detroit	6.50 to 7.00
St. Louis	5.00 to 5.50

STEEL RAILS SHORT

Birmingham	11.50 to 12.00
Boston, dealers	6.50 to 7.00
Buffalo	12.00 to 12.50
Chicago (3 ft.)	11.50 to 12.00
Chicago (2 ft.)	12.00 to 12.50
Cincinnati, del.	11.50 to 12.00
Detroit	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	15.00 to 15.50
St. Louis	10.50 to 11.00

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, dealers	4.50 to 4.75
Buffalo	9.00 to 9.50
Chicago, net	8.00 to 8.50
Cinci., deal. net	6.00 to 6.50
Detroit, net	4.50 to 5.00
Eastern Pa.	9.00 to 9.50
N. Y. deal. Fdry.	6.00 to 6.50
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	11.50 to 12.00
Chicago	11.00 to 11.50
Eastern Pa.	14.00
Pittsburgh	15.00 to 15.50
St. Louis	10.00 to 10.50

ANGLE BARS—STEEL

Chicago	11.00 to 11.50
St. Louis	9.50 to 10.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.50 to 12.50
Cleveland bil. and bloom crops	12.50 to 13.50
Eastern Pa.	13.00 to 14.00
Pittsburgh billet bloom crops	15.50 to 16.00
Pitts., sheet bar crops	15.50 to 16.00

FROGS, SWITCHES

Chicago	10.50 to 11.00
St. Louis	10.00 to 10.50

SHOVELING STEEL

Chicago	10.25 to 10.75
Cleveland	6.75 to 7.00
St. Louis	9.00 to 9.50

RAILROAD WROUGHT

Birmingham	7.00 to 7.50
Boston, dealers	2.00 to 2.50
Buffalo, No. 1	7.00 to 8.00
Buffalo, No. 2	11.00 to 11.50
Chi., No. 1, net	9.00 to 9.50
Chi., No. 2	10.25 to 10.75
Cinci., No. 2	9.00 to 9.50
Eastern Pa.	13.00
N. Y., No. 1 deal.	5.50 to 6.00
Pitts., No. 1	13.50 to 14.00
St. Louis, No. 1	7.00 to 7.50
St. Louis, No. 2	8.75 to 9.25

SPECIFICATION PIPE

Boston	4.00 to 4.50
Eastern Pa.	9.50 to 10.00
N. Y., deal.	5.50 to 6.00

BUSHELING

Buffalo, No. 1	9.50 to 10.50
Chicago, No. 1	8.50 to 9.00
Cinci., No. 1 deal.	6.50 to 7.00
Cinci., No. 2	3.00 to 3.50
Cleve., No. 2	8.00 to 8.25
Det., No. 1 new	8.25 to 8.75
St. Louis, No. 1	6.00 to 6.50
Val. new No. 1	12.50 to 13.00

MACHINE TURNINGS

Birmingham	3.00 to 3.25
Boston, dealers	4.25 to 4.50
Buffalo	6.25 to 6.75
Chicago	6.00 to 6.50
Cinci., deal.	5.50 to 6.00
Cleveland	8.00 to 8.25
Detroit	6.50 to 7.00
Eastern Pa.	8.00 to 8.50
N. Y., deal.	4.00 to 4.50
Pittsburgh	10.25 to 10.75
St. Louis	3.00 to 3.50
Valleys	10.75 to 11.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	3.50 to 3.75
Buffalo	6.50 to 7.00
Cinci., deal.	5.50 to 6.00
Cleveland	8.25 to 8.50
Detroit	7.00 to 7.50
Eastern Pa.	7.00 to 7.50
N. Y., deal.	4.00 to 4.50
Pittsburgh	10.00 to 11.00

CAST IRON BORINGS

Birming., plain	3.00 to 3.25
Boston, chem.	9.00 to 10.00
Boston, dealers	3.25 to 3.50
Buffalo	6.25 to 6.75
Chicago	6.00 to 6.50
Cinci., deal.	5.50 to 6.00
Cleveland	8.25 to 8.50
Detroit	7.00 to 7.50
E. Pa., chem.	10.00 to 12.00
N. Y., deal.	4.00 to 4.25
Pittsburgh	10.25 to 10.75
St. Louis	3.50 to 4.00

PIPE AND FLUES

Cinci., deal.	4.50 to 5.00

RAILROAD GRATE BARS

Buffalo	5.00 to 5.50
Chicago, net	7.50 to 8.00
Cincinnati	5.00 to 5.50
Eastern Pa.	9.00 to 9.50
N. Y., deal.	4.50 to 5.00
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, dealers	5.00 to 5.50
Buffalo	9.00 to 9.50
Cleve. ov. 10 in.	9.00 to 9.50
Detroit	8.00 to 8.50

FORGE SCRAP

Boston, dealers	4.00 to 4.50
Chicago (heavy)	11.50 to 12.00
Eastern Pa.	10.00

ARCH BARS, TRANSOMS

Chicago, net	8.00 to 8.50
St. Louis	9.00 to 9.50

AXLE TURNINGS

Boston, dealers	4.50 to 4.75
Buffalo	7.50 to 8.00
Chi., elec. fce.	8.00 to 8.50
Cleveland	9.50 to 10.00
Eastern Pa.	10.00 to 10.50
St. Louis	4.00 to 4.50

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	8.00 to 8.50
Buffalo	10.00 to 11.00
Chicago, net	11.50 to 12.00
Eastern Pa.	15.50
St. Louis	10.25 to 10.75

SHAFTING

Boston, ship. pt.	9.50 to 10.00
Eastern Pa.	15.00 to 15.50
N. Y., deal.	10.00 to 10.25
St. Louis	7.50 to 8.00

CAR WHEELS

Birming., iron	9.00 to 9.50
Boston, iron deal.	5.50 to 6.00
Buffalo, iron	8.00 to 9.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi., rolled steel	11.50 to 12.00
Cincinnati, iron	8.50 to 9.00
E. Pa., iron	12.00 to 13.00
E. Pa., steel	14.00
Pitts., iron	12.50 to 13.00
Pitts., steel	15.00 to 15.50
St. Louis, iron	8.50 to 9.00
St. Louis, steel	10.00 to 10.50

NO. 1 CAST SCRAP

Birmingham	9.00 to 10.00
Boston, No. 2	5.00 to 5.50
Boston, Tex. con.	10.00 to 10.50
Buffalo, cupola	10.00 to 10.50
Buffalo (mach.)	11.00 to 11.50
Cleve. cupola	10.50 to 11.00
Chi., mach. net	10.50 to 11.00
Chi., railroad net	10.00 to 10.50
Cinci., mach. cup.	9.00 to 9.50
Cleve. cupola	10.00 to 10.50
Detroit, net	8.50 to 9.00
E. Pa., cupola	11.50 to 12.00
N. Y., cup. deal.	6.00 to 6.50
N. Y., del. local foundries	9.00 to 9.50
Pitts., cupola	11.00 to 12.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. Louis, No. 1	8.50 to 9.00
St. L. No. 1 mach.	8.50 to 9.00

HEAVY CAST

Boston, del.	5.25 to 5.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break	7.00 to 8.00
Cleve., break	7.50 to 8.00
Detroit, auto net	9.50 to 10.00
Detroit, break.	6.50 to 7.00
Eastern Pa.	10.00 to 10.50
N. Y., No. 1, deal.	7.00 to 7.50
N. Y., break. deal.	6.25 to 6.75
Pittsburgh	10.50 to 11.00

MALLEABLE

Boston, consum.	11.00 to 12.00
Buffalo	11.50 to 12.00
Chicago, R. R.	11.00 to 11.50
Cinci., agri. del.	8.50 to 9.00
Cinci., R. R. del.	9.00 to 9.50
Cleveland, rail	11.50 to 12.00
Detroit, auto	8.50 to 9.00
St. Louis, R. R.	9.00 to 9.50

RAILS FOR ROLLING
5 feet and over

Birmingham	9.50 to 10.50
Boston, dealers	6.00 to 6.50
Buffalo	9.00 to 9.50
Chicago	11.00 to 11.50
Eastern Pa.	12.00
New York, dealer	7.00 to 7.25
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago, cut	11.00 to 11.50
St. L., No. 1	8.50 to 9.00

LOW PHOS. PUNCHINGS

Buffalo	11.00 to 11.50
Chicago	11.50 to 12.00
Eastern Pa.	12.50 to 13.50
Pittsburgh	15.00 to 15.50

practically the only activity. Some prices are slightly higher.

Chicago—The scrap market is quiet, new sales to mills being light and an increase in offerings of old material bringing a slightly easier tone. Quotations generally are steady, however, though dealers are able to pick up heavy melting steel at around $10.25 and occasionally at less, compared with a $10.50 minimum previously. Last sales to consumers were made at $10.75. Prices on other grades generally are unchanged.

Boston—Steelworks grades of scrap for New England delivery have advanced, the result of higher prices for outside shipment and limited local supply. For No. 1 heavy melting steel $9 to $9.50 has been paid for delivery at Phillipsdale, R. I., and Worcester. No. 2 scrap has advanced by the normal ratio.

New York—Scrap shipments continue in good volume to steel works, but activity of two weeks ago has largely subsided. Prices are firm, but for the moment the rise in most grades appears halted. Better than $7.50 f.o.b. has been done on No. 2 steel, however, and No. 1 grade is also reported to have broken over $8.50, shipping point. Stove plate is stronger. Export buyers for Japan are reported to have met the recent domestic rise, but those for several other foreign ports have not followed. Buying for barge loading holds well.

Philadelphia—Apart from an advance to $14, delivered, on steel wheels, knuckles and couplers, the local scrap market is unchanged. While there is fairly active buying, the situation is not as brisk as a fortnight ago.

Buffalo—Difference of opinion as to No. 1 heavy melting steel still prevents tonnage deals but it is reported the gap between asked and offered prices is narrowing and that buying may be expected at any time.

Detroit—Despite the fact that the local mill is practically out of the market and is offering lower prices, and demand from outside districts is a little easier, scrap lists closing at the present time are bringing the highest prices of the year. The deduction is that dealers are covering.

Cincinnati—Prices on iron and steel scrap showed no changes during the past week. Despite less activity, prices are strong in the face of closely held accumulations.

Birmingham, Ala. — Market for steel and iron scrap remains strong with prices firm and unchanged. Dealers are protesting continuance of direct sales, especially by railroads.

Toronto, Ont.—Trading in iron and steel scrap has been light. Shipments of steel scrap on export account against contracts are going forward.

Equipment

Sales Withstanding Seasonal Pressure; Prices Firmer

Chicago—While a slight lull has developed in sales of some machinery and equipment recently, activity generally retains most of the previous gains. Uncertainty attached to business through the inauguration of the industrial recovery program, particularly as it affects costs, is seen as deferring some purchases though in certain products little slackening in sales is evident.

Railroads in this district still pursue a conservative program in equipment purchases and few sales of machinery are noted. Steel companies

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have some additional purchases in view, machine tool orders from the Illinois and Inland Steel companies being anticipated.

Crane sales are active, with purchases by private users showing a fair gain recently and offsetting the decrease noted in requirements for public projects. A few inquiries are appearing from steel companies, while scrap yards have been better buyers. Demand for repair parts for miscellaneous equipment reflects better operations in various industries.

New York—Inquiry for some lines of machinery holds well, dealers and builders figuring on a sizable volume of business in several instances. Sales are well spread, usually for one or two tools at a time. There is also a firmer price tendency. Used machines are in good demand.

There have been few recessions in general industrial activities, although in spots operating schedules are somewhat slower. Railroad shops are taking little equipment, although the New York Central recently bought six 300-ampere arc welders for building up frogs and switches. This business went to three sellers. Some railroads are selling used equipment with a tendency to centralize repair and shop operations.

Boston—Builders are figuring a fair number of inquiries for new special machines. Orders, usually at the low point at this season, are holding moderately well, sales being made on one or two tools at a time.

Some plants are experiencing difficulty in adjusting shop schedules economically. Several shops have booked foreign orders in the last two weeks.

Cleveland—Sales of machinery and equipment, especially the former, are at a fast pace, although good delivery can be made on all lines. Used tools are moving well, and some machinery dealers are reported too busy even to consider vacations, with the best summer business in some three or four years on their hands.

Men of Industry

(*Concluded from Page* 21)

also is connected with the Electric Railweld Corp., Chicago.

□ □ □

Walter Arns, formerly district factory engineer for Gardner-Denver Co., Quincy, Ill., has been appointed branch sales manager at Tulsa, Okla.

□ □ □

William P. Witherow, prominent Pittsburgh industrialist, has been elected a director of the Blaw-Knox Co., Blawnox, Pa. Mr. Witherow is an official or director in other Pittsburgh district concerns including the Pittsburgh Coal Co. and First National Bank of Pittsburgh.

□ □ □

J. C. Fox, chief chemist and metallurgist of the Doehler Die Casting Co., Aug. 1 changed his headquarters from New York to the plant at Toledo, O., where the executive offices are now located.

□ □ □

Thomas S. Hammond, president, Whiting Corp., Harvey, Ill., and also president of the Illinois Manufacturers' association, has been appointed by Gen. Hugh S. Johnson as executive director of the national emergency re-employment program.

□ □ □

W. J. MacKenzie, formerly vice president of the Interstate Iron & Steel Co., prior to its acquisition by the Republic Steel Corp., has been given charge of sales and supervision of metallurgy of the alloy steel division of the Youngstown Sheet & Tube Co., Youngstown, O. His headquarters are in Chicago.

Mr. MacKenzie began his alloy steel experience in 1913 with the old United Steel Co. at Canton, O., and has been continuously associated with the manufacture and sale of alloy steels for the past 20 years.

□ □ □

George E. Johnson, long associated with Fairbanks, Morse & Co., in executive capacities, resigned July 31 to form an immediate connection with the A. O. Smith Corp., Milwaukee, as assistant to W. C. Heath, vice president and general manufacturing manager. Mr. Johnson formerly was manager of the Fairbanks, Morse & Co. works at Three Rivers, Mich., and in January, 1931, he was transferred to the main works at Beloit, Wis., as assistant to Mr. Heath, who then was vice president in charge of all manufacturing, but later accepted appointment to similar duties with the Smith corporation.

□ □ □

James W. Owens, for the past three years engaged in private consulting practice and director of engineering of the Welding Engineering & Research Corp., has been appointed consulting engineer and director of the new welding division of the National Weld Testing bureau of the Pittsburgh Testing Laboratory, Pittsburgh. At one time Mr. Owens was director of welding of the Newport News Shipbuilding & Dry Dock Co., and early in his career was associated with the bureau of construction and repair of the navy department and was located at the Norfolk, Va., navy yard. In 1928 he was awarded the first prize in the Lincoln Electric Co.'s international competition. He is the author of "Fundamentals of Welding—Gas, Arc and Thermit."

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Warehouse

Cold-Finished Price Up $5; Buying Holds Good Rate

Pittsburgh—Coincident with advances of $5 a ton on cold-drawn, Pittsburgh warehouses have named a base of 3.20c, effective at once on cold-drawn flats, squares, rounds and hexagons. No announcement has been made affecting hot-rolled bar, plate or shape prices. Sheet prices are steady and unchanged. Sales by warehouses here are slightly higher than this week a month ago.

Cleveland—Effective immediately, warehouses have advanced cold-finished steel rounds, squares and hexagons to 3.25c; and flats to 3.40c, following the increase of $5 a ton in mill prices. The volume of general warehouse business shows little change; one or two sellers report a slight improvement in the week.

Chicago—Cold-drawn bars have been advanced $5 a ton to 3.25c for rounds and hexagons up to and including 7 inches, and for flats and squares up to and including 6 inches. Business increased moderately during the first week this month, following a slight lull the latter part of July.

New York—Cold-finished steel has been advanced $5 a ton by warehouses, rounds and hexagons now being 3.79c with flats and squares 4.29c. Warehouse volume holds to the current rate.

Buffalo—Warehouse business has been much better this quarter than the average for recent months. Sheets and bars are moving especially well.

Philadelphia—Cold-drawn bars have been advanced to 3.60c, a direct reflection of the $5 a ton increase in the mill price. Demand generally is moderate, with July bookings about on a level with June, according to some leading jobbers.

Detroit—Cold drawn bars have been advanced $5 a ton, to a base of 3.40c, out of warehouse here, effective the middle of last week when galvanized sheets were marked up to 3.85c, local warehouse. Demand in July leveled off and August so far shows no change.

Cincinnati—Steel jobbers foresee no decided decline in business for the month, and demand may hold to the mark established in June and maintained through July, the two best months this year. Cold-drawn bars are quoted higher at 3.57c base, compared to 3.32c.

Pennsylvania Refining Co., Karns City, Pa., has placed an order for $30,000 worth of automatic canfilling machinery.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials, except reinforcing and Swedish bars)

STEEL BARS

Baltimore*	2.45c
Boston††	2.50c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New Orleans	2.65c
New York‡ (d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.50c-2.60c
Portland	3.15c
San Fran.	3.15c
Seattle	3.15c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.35c
Boston††	2.70c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.00c-2.45c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.10c
New Orleans	2.75c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.50c-2.60c
San Fran. cl.	2.00c
San Fran. lcl	2.40c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	2.45c
Boston††	2.60c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.30c
New Orleans	3.50c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.15c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore*	2.45c
Boston††	2.60c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼ in. and thicker	2.95c
Cleve., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	3.50c
New York (d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.80c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	2.70c
Boston††	2.35c
Buffalo	3.10c
Chattanooga	3.44c
Chicago	2.75c
Cincinnati	3.05c
Cleveland	2.75c
Det., 8-10 ga.	2.90c
Houston	3.35c
Los Ang.	3.40c
New Orleans	3.25c
New York	3.00c
Portland	3.75c
Pitts.**	2.75c
San Fran.	3.33c
Seattle	3.75c
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.25c
Boston††	3.45c
Buffalo	3.25c
Chattanooga	3.50c
Chicago	3.45c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.30c
Los Ang.	3.80c
New York	3.65c
Pitts.**	3.40c
Portland	4.50c
San Fran.	3.95c
Seattle	4.50c
St. Louis	3.70c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	3.75c
Buffalo	4.00c
Boston††	4.00c
Chattanooga	3.95c
Chicago	4.00c-4.10c
Cincinnati	4.00c
Cleveland	3.85c
Detroit	3.85c
Houston	3.57c
Los Ang.	4.00c
New Orleans	4.25c
New York	4.00c
Pitts.**	3.75c-4.00c
Portland	5.00c
San Fran.	4.55c
Seattle	5.00c
St. Louis	4.25c
St. Paul	4.19c
Tulsa	5.10c

†BANDS

Baltimore	2.75c
Boston††	3.00c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New Orleans	3.00c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.65c
San Fran.	3.15c
Seattle	3.65c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.20c

†HOOPS

Baltimore	2.65c
Boston	4.90c
Buffalo	3.55c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.65c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.15c
St. Paul	3.75c

COLD FIN. STEEL

Baltimore (c)	3.33c
Boston (g)	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.25c
Cincinnati	3.57c
Clevel'd, flats	3.40c
Do., rounds squares, hexagons	3.25c
Detroit	3.40c
Los Ang.	5.50c
New Orleans	4.25c
New York	3.79c
Philadelphia	3.35c
Pittsburgh	3.20c
Portland (f)	4.50c
San Fran.(d)	5.50c
Seattle (f)	4.50c
St. Paul	3.20c
St. Louis	3.36c
Tulsa	4.65c

COLD ROLL. STRIP

Boston 0.100 in., 500 lb lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex, only.
(b) Net base straightening, cutting boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs., extras on less.

Prices at Detroit, Cleveland, New York, Chicago, Pittsburgh Cincinnati, Chattanooga and St. Louis on heavier lines are subject to new quantity differentials:
399 pounds and less, up 50c; 400 to 999 pounds, base; 1000 to 4999 pounds, 20c off; 5000 to 9999 pounds, 40c off; 10,000 to 39,999 pounds, 60c off; 40,000 pounds and over 75c off.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 9.00c, Conn., for copper

Sheets

Yellow brass (high)	14.50
Copper, hot rolled	16.12½
Lead sheets, cut to jobbers	8.25
Zinc sheets (100-lb. base)	9.00

Tubes and Pipes

Seamless yellow brass (high)	16.37½
Seamless copper	16.52½

Rods

Yellow brass (high, full turnings)	12.25
Naval brass	12.37½

Anodes

Copper, untrimmed	14.50

Wire

Yellow brass (high)	14.75

Old Metals

Dealers' buying prices, cents lb

No. 1 Composition Red Brass

New York	5.00 to 5.25
Chicago	4.75 to 5.00
Cleveland	5.75 to 6.25
St. Louis	5.50 to 6.00

Heavy Yellow Brass

New York	3.75 to 4.00

Heavy Copper and Wire

New York	6.75 to 7.00
Chicago, No. 1	6.37½ to 6.62½
Cleveland	6.00 to 6.50
St. Louis	5.75

Composition Brass Borings

New York	4.75 to 5.00

Yellow Brass Tubing

Cleveland	4.50 to 5.00

Light Copper

New York	5.50 to 5.75
Chicago	5.12½ to 5.37½
Cleveland	5.50 to 6.00
St. Louis	5.50

Light Brass

Chicago	3.00 to 3.25
Cleveland	3.50 to 4.00
St. Louis	3.00 to 3.25

Lead

New York	3.50 to 3.62½
Cleveland	3.00 to 3.50
Chicago	3.25 to 3.50
St. Louis	3.25 to 3.50

Zinc

New York	2.25 to 2.50
Cleveland	2.25 to 2.75
Chicago	2.50 to 2.75
St. Louis	2.75 to 3.00

Aluminum

Clippings, new, soft, Cleve.	13.00 to 14.50
Clippings, hard, Cleveland	9.00 to 10.00
Borings, Cleveland	5.00 to 6.00
Mixed cast, Cleveland	8.00 to 8.50
Mixed cast, St. Louis	8.00 to 8.50

Secondary Metals

Brass ingot, 85-5-5-5	9.00
Remelt aluminum No. 12	12.50 to 13.50

Metals

Prices Remain Steady Pending Outcome of Codes—Tin Trading Hindered by Erratic Exchange

New York—Codes of fair competition have been of chief interest in the nonferrous metal markets recently and these have had important bearing on prices. Sentiment is that the codes will result in generally higher prices but, in the meantime, these have held generally steady pending their outcome. The zinc industry, including all its branches, presented a code last Thursday calling for a 42-hour week and minimum hourly rates from 30 to 39 cents an hour which was accepted by the administration. Producers of copper and products also have presented a code which now awaits a hearing. Other branches of the nonferrous trade are expected to present codes shortly.

Copper—First-hand sellers held electrolytic metal firmly at 9.00c, Connecticut, despite only fair demand, lower prices abroad and the appearance of offerings by speculative interests at prices ranging down to 8.50c. Copper and brass product producers announced an advance of ½-cent in prices, effective Aug. 4, based on increased manufacturing costs under provisions of the code. Scrap allowances were not increased.

Zinc—The market was generally quiet although some fair tonnages were booked on contract bases. Bulk of the business was for spot and nearby delivery although some was for late in the year. Prime western metal remained firm at 5.00c, East St. Louis.

Lead—Fair business was done early in week but only carlot buying developed later. Very little coverage has been made for September requirements although books have been open several days for that month. Prices continued firm.

Tin—Quotations were nominal on most days with sales only in light to fair volume. Rapid fluctuations in sterling exchange and consequently in tin prices hindered trading. The general trend in prices was downward. Tin deliveries showed a further gain in July. July tin plate output was the largest for any previous corresponding month in several years.

Antimony—Demand was quiet with prices under recent levels.

Aluminum—Virgin was quiet. Remelt continued firm.

Distillates Firm

New York—Distillate prices are firm and unchanged. Demand is active, notably from industrial and chemical users. While output of toluol has been slightly heavier, current demand continues ahead of supply. Sulphate of ammonia is unchanged at $24 a ton, cars, f.o.b. Atlantic port, with shipments steady.

Coke By-Products

Per Gallon Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.20

Quicksilver Easier

New York—Quicksilver is quoted at lower levels in a quiet market. Small lots are held at $64 to $65 a virgin flask of 76 pounds, while the minimum quotation reported on round lots is $63.50.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
July 29	9.00	9.12½	8.75	45.25	45.45	4.50	4.35	5.00	*22.90	7.12½	35.00
July 31	9.00	9.12½	8.75	44.75	44.95	4.50	4.35	5.00	*22.90	7.12½	35.00
Aug. 1	9.00	9.12½	8.75	44.12½	44.42½	4.50	4.35	5.00	*22.90	7.12½	35.00
Aug. 2	9.00	9.12½	8.75	45.00	45.30	4.50	4.35	5.00	*22.90	7.12½	35.00
Aug. 3	9.00	9.12½	8.75	44.87½	45.20	4.50	4.35	5.00	*22.90	7.12½	35.00
Aug. 4	9.00	9.12½	8.75	44.90	45.20	4.50	4.35	5.00	*22.90	7.12½	35.00

*Nominal quotation. Market range 19.90c to 22.90c.

Pacific Coast

Award of 28,000 Tons for Transmission Towers Feature of Week — Other Lettings Are Small — Much Tonnage Is In Prospect when Financed — Large Dam Project Assured

San Francisco—(*By Air Mail*)—Featuring the iron and steel market this week was the placing of the largest transmission tower tonnage ever awarded in the United States. Tower Builders Inc., Los Angeles, took 23,000 tons and McClintic-Marshall Corp. secured 5000 tons, for the city of Los Angeles. Steel mill representatives believe plate prices will firm up to the nominal figure of 2.10c, c.i.f., within a few days. The present market is 1.75c.

Awards of reinforcing bars aggregated less than 350 tons. Unnamed interests secured 100 tons for highway work in Clark and Salt Lake counties, Utah. Los Angeles opened bids Aug. 2 for 1174 tons. Plans have been completed for the Broadway tunnel, Oakland, Calif., calling for 2210 tons.

Judson-Pacific Co. booked 300 tons of plates and 125 tons of high carbon bars for cell work of the San Francisco county jail.

Structural shape lettings, except the 28,000 tons of transmission towers, were confined to projects involving less than 100 tons. Over 225 tons are involved in the Broadway tunnel, Oakland. Standard shapes are firm at 2.10c, c.i.f., with wide flanged material 2.20c.

No cast iron pipe awards of size were reported. Pending business exceeds 5900 tons. Signal Hill, Calif., will open bids Aug. 14 for 333 tons of 6 to 16-inch pipe. Bids have been opened on 843 tons of 1-inch black tubing for Boulder Dam.

Water and power department of Los Angeles will take bids Aug. 7 for 510 tons of black copper rod, hot-rolled, for delivery during 1934 and on 4,870,000 feet of ½-inch extra galvanized high strength steel wire strand and 430,000 feet of copper-covered steel wire strand.

Seattle Sales Are Small

Seattle—Steel awards in the Pacific Northwest still are small, but plans are maturing for heavy tonnages. Appointment of a public works administrator for this district is expected to speed allocation of public money. Approval by the President of the $80,000,000 Coulee dam project in Washington appears to insure an improvement that has been agitated for years.

Pacific Coast Steel Corp., Seattle, is operating on an increased schedule. While no large tonnages have been booked, small specifications and orders from railroads, the lumber industry and stock replenishing show general improvement. The trade awaits further increases in mill prices. The jobbing trade is fairly good, better than June, and shows a gain over last year. Buying is mainly out of stock, mill business still being far below normal. Seattle and Portland wholesalers are working on a parity price schedule.

Awards this week included 105 tons of shapes to Wallace Bridge & Structural Steel Co., Seattle, for a brew house for Horluck Brewing Co., Seattle. Pacific Coast Steel Corp., Seattle, booked 100 tons for paving in King county, Washington. Todd Dry Docks Inc., Seattle, has the contract at about $250,000 to repair the damaged steamer H. F. ALEXANDER, 70 plates being involved. United States penitentiary, McNeil Island, Wash., has called new bids, Aug. 8, for about 250 tons of 6, 10 and 18-inch cast iron pipe. The Alderwood Manor, Wash., pipe job has been awarded for wood pipe to Joe Coluccio, Seattle. Chelan county commissioners have issued a call for bids Aug. 14, at Wenatchee, Wash., for a steel truss bridge over Wenatchee river, requiring 430 tons of structurals.

Steel in Europe

Fall Buying Promises Well; Japan Active in Wire Trade

London—(*By Cable*)—Holiday interruption is checking business but prospects for autumn trade are favorable, as shown by the volume of forward inquiries. In the Midlands the light steel trade is improving. Tin plate is weaker.

The Continent reports trade is quiet. America and Japan are competing keenly in the wire products export markets. Germany has been obtaining some small Spanish orders for sheet bars and beams.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 3

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d	£ s d
PIG IRON					
Foundry, 2.50-3.00 Silicon	$13.28	2 18 6	$8.27		1 14 0
Basic bessemer	12 26	2 14 0*	7.30		1 10 0
Hematite, Phos. .03-.05	13.39	2 19 0	.....		.....
SEMIFINISHED STEEL					
Billets	$22.70	5 0 0	$11.44		2 7 0
Wire rods, No. 5 gage	34.05	7 10 0	21.90		4 10 0
FINISHED STEEL					
Standard rails	$35.19	7 15 0	$26.77		5 10 0
Merchant bars	1.34c	6 12 6	.66c		3 0 0
Structural shapes	1.49c	7 7 6	.61c		2 15 0
Plates, †¼ in. or 5 mm	1.67c	8 5 0	.86c		3 18 6
Sheets, black, 24 gage or 0.5 mm.	1.82c	9 0 0	1.27c		5 15 0
Sheets, gal., 24 gage, corr.	2.22c	11 0 0	1.60c		7 5 0
Bands and strips	1.57c	7 15 0	.83c		3 15 0
Plain wire, base	1.77c	8 15 0	1.18c		5 7 6
Galvanized wire, base	2.12c	10 10 0	1.38c to 1.40c		6 5 6 to 6 7 6
Wire nails, base	2.42c	12 0 0	1.27c		5 15 0
Tin plate, box 108 lbs.	$ 3.92	0 17 3	.....		.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$14.19	3 2 6(a)	$11.28	210	$11.49	300	$20.66	63
Basic bessemer pig iron	13.39	2 19 0(a)*	10.47	195	8.81	230	22.80	69.50
Furnace coke	3.01	0 13 3	6.44	120	4.21	110	6.31	19.25
Billets	22.70	5 0 0	21.75	405	16.85	440	31.65	96.50
Standard rails	1.67c	8 5 0	1.67c	697	1.87c	1,100(b)	1.97c	132
Merchant bars	1.39c	6 17 6	1.34c	500	.91c	535	1.64c	110
Structural shapes	1.77c	8 15 0	1.32c	550	.91c	535	1.60c	107.50
Plates, †¼-in. or 5 mm	1.72c	8 10 0	1.63c	680	1.15c	675	1.89c	127
Sheets, black	2.02c	10 0 0§	2.04c	850‡	1.28c	750‡	2.15c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	2.53c	12 10 0	3.48c	1,450	2.47c	1,450	5.51c	370
Plain wire	1.77c	8 15 0	2.71c	1,130	2.21c	1,300	2.64c	177
Bands and strips	1.92c	9 10 0	1.49c	620	1.15c	675	1.89c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough. b Since January

Steel Warehouse Code for 40 Hours, $14-$15 Week

A code for steel warehouse distributors has been drafted by a committee of the American Steel Warehouse association, Philadelphia, the committee consisting of Guy P. Bible, chairman; G. Maurice Congdon, Edward L. Ryerson (acting in the absence of E. D. Graff), Edward L. Parker and Lester Brion.

No labor under 16 years of age is to be employed. The maximum work week is 40 hours, weekly pay in cities of more than 500,000 population will be $15, in cities between 250,000 and 500,000, $14.50 and in cities less than 250,000 population, $14.

Distributors will file complete price schedules with the association, effective on 10 days' notice. Members of the association will participate pro rata in the cost of administering the code and voting power will be on the basis of gross sales, typical rating being one vote for gross sales of $100,000 and less, four votes for sales of $500,000 to $1,000,000 and 20 votes for gross sales of $5,000,000 or more a year.

Rerollers Will Meet To Define Their Code Status

Rerollers in the Philadelphia district are scheduled to meet there Aug. 8 to discuss their status under code regulations. The feeling prevails, in some quarters at least, that their position in the industry was not given adequate recognition in the code formulated by the American Iron and Steel institute. Whether similar group meetings are to be held in other sections of the country is not definitely known here.

According to the interpretation of some rerollers, the institute code allows them no choice but to quote on the same basis as the producers of primary material. As they admittedly acknowledge that they cannot meet the same demands as primary producers in all cases, they believe that to attempt to meet the same price would seriously jeopardize their business.

Steel Founders Reorganize; Approve Code for NRA

(*Concluded from Page* 14)

ganization and then on behalf of the board proceeded to present the code.

A basic 40-hour week, similar in many respects to the American Iron and Steel institute's proposal in behalf of the steel industry, was approved. Mandatory elimination of employment of minors was voted. A series of wage districts covering 8 geographic and municipal areas was established, and the minimum basic wage rate covering gradations from 30 cents an hour in four southern sections to 40 cents an hour in industrial regions was unanimously approved. The differential is carefully determined and supported by statistics from each of the districts on rates prevailing in the past. The spread between other classes of labor will not be affected.

Administration of the code is assigned to directors, each of whom, respectively, is elected as the chairman of one of the 8 geographical divisions of the industry. Each individual member firm is given one Class A vote and additional Class B votes determined in proportion to the value of tonnage production. A three-fourths vote of both classes of votes is required in determination of matters of major policy.

The elective officers of the society consist of the president of the society and the chairman of the board. Colonel Baker is executive vice president and R. L. Collier is secretary. Offices are maintained in the Graybar building, New York..

Malleable Founders Form New Body for NRA

At a meeting of the malleable industry of the United States in Cleveland, July 31, a new organization known as the Malleable Founders' society was established. The society has been vested with full authority by the industry to represent all mallable foundries under NIRA.

A code embodying minimum hours of labor made necessary by the continuous character of operation in producing malleable castings and with a variable scale of wages fully in accord with the spirit of the NRA was adopted and soon will be submitted for approval.

The Malleable society will be governed by a board of directors of 12 and the committee of 12 previously elected to represent the three sections, eastern, central and midwestern was unanimously elected to serve until the annual meeting in 1934.

Files Steel Scrap Code

Institute of Scrap Iron and Steel Inc., New York, Aug. 3 filed a code with NRA in Washington, calling for a 40-hour week and a minimum wage rate of 37½ cents per hour except in the South, where 25 and 27 cents are specified. A national conservation commission, on which consumers of scrap as well as dealers and brokers, will be represented. Pending final adoption of the code, immediate favorable action on hours and wages is asked.

Plan Special Steel Cachet

Specially cacheted envelopes will be available at the Century of Progress exposition in Chicago on Sept. 30, "steel day," according to Lou W. Kreicker, industrial advertising man, 201 North Wells street, Chicago, cachet director of the exposition. A special design commemorating "steel day" will be a feature. Envelopes are available from Mr. Kreicker at 15 cents each.

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Here and There in Industry

PACIFIC IRON WORKS INC. is being organized at Portland, Oreg., to take over the plant of the Pacific Iron Works, formerly owned and operated by O. E. Heinze, deceased. Leo Munson, Portland, has been appointed plant manager and William Duthie has been elected president. Pacific Iron Works is a structural steel fabricating plant with capacity of about 1000 tons per month. The plant site is about 4½ acres and the main building is 125 x 1000 feet. Present inventory is about 1500 tons but it is intended to build this to about 3000 tons.

Hofius Steel & Equipment Co. structural steel plant at Seattle is now being operated by Steel Fabricators Inc., of which William Duthie is president and C. M. Styer is plant manager. This plant also has capacity of about 1000 tons per month, covering several acres. The latter plant is being leased by Steel Fabricators Inc. but the former plant has been bought outright. William Duthie is head of a syndicate which is obtaining control of various plants in the Northwest to care for rapidly increasing volume of fabricating business and larger needs of the future.

Barde Sales Co., Seattle, is being organized by L. B. Barde, vice president of the Barde Steel Co., which has steel warehouses in Seattle, Tacoma and Portland. Purpose of the sales company is to represent steel mills in distributing products in Washington, Oregon, Idaho and Montana. Sales force of the Barde Steel Co. will cooperate with the sales company on direct mill shipments. Sales company headquarters are at 2709 Utah avenue, Seattle.

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Steel Drum Accessories Corp., Buffalo, has taken a lease on a foundry at 38 A street and will start operations soon. H. J. Alt is general manager.

□ □ □

Ludlum Steel Co., Watervliet, N. Y., has started production of stainless steel at its plant at Dunkirk, N. Y., for quantity use in fabrication of beer barrels.

□ □ □

Clark Controller Co., Cleveland, has appointed C. R. Lynch, 918 Chester Williams building, Los Angeles, its representative in southern California.

□ □ □

Aluminum Specialty Co., Manitowoc, Wis., has bought the business of the Metal Goods Corp., St. Louis, and will dismantle the factory at St. Louis, transferring machinery and stock to Manitowoc. The company manufactures smaller aluminum ware and was established 25 years ago. Walter Spindler is president, Charles Krug vice president and A. J. Kempfert secretary and treasurer.

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Ashton Valve Co., Cambridge, Mass., has appointed C. B. Burgoyne, 408 North Twenty-third street, Birmingham, Ala., its sales agent for Alabama.

□ □ □

Young Radiator Co., Racine, Wis., manufacturer of cooling systems and heating units, is experiencing a continued large demand for its products anl its plant is operating at a high rate to keep pace.

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A B C Coal & Coke Co., Birmingham, Ala., succeeded Aug. 1 to the business of the Hammond Iron Co. The change in name is to indicate more clearly the nature of its business. Officers and selling staff will not be changed.

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Homestead Valve Mfg. Co., Coraopolis, Pa., has appointed Reeves-McCormick Inc., 5317 North Second street, Philadelphia, its exclusive representative in the Philadelphia district for its vapor spray equipment.

□ □ □

Cooley Electric Furnace Co., Long Island City, N. Y., has been organized to manufacture Bluehead electric furnaces for use in laboratory and toolroom. W. B. Cooley, closely associated with the electric furnace business for years, is in charge. Exclusive license for use of the Doreco heating element has been granted Mr. Cooley by the Doherty Research Corp.

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Container Corp. of America, 111 West Washington street, Chicago, has sold its plant at Cleveland to Edward R. Hankins and associates, who will operate the plant as the Hankins Container Co. Mr. Hankins has been vice president of the Container Corp.

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Lynch Corp., Anderson, Ind., manufacturer of glass-blowing machinery, has called back all its former employes and added nearly fifty per cent more. The plant has orders to keep it employed until the end of the year.

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Joseph T. Ryerson & Son Inc., Chicago, has published a larger and more complete stock list than any previous issue. It contains more than 200 pages with information and data on practically every kind of steel made, as well as brass, copper and other nonferrous metals.

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Building Materials Exhibits Salons Inc. will establish the first of 50 similar exhibits of building materials and home appliances at Dubuque, Iowa, with Herbert A. Kennison, president, in charge. It is intended to be educational and informative, and no sales feature is included.

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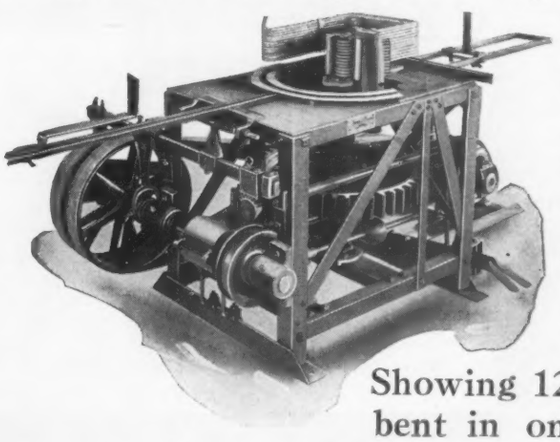
Betten, Brauman & Co., Green Bay, Wis., dealers in steel and iron scrap, have forwarded a cargo of 2000 tons of scrap by boat to Detroit. Three or more water shipments will be made to the east before navigation closes. The Green Bay company is handling about 50

The Kardong Stirrup Bender



This bender is the result of our 20 years experience in the manufacture of reinforcing steel benders. One man can easily turn out four-bend stirrups from ⅜" stock at the rate of 300 or more per hour thus keeping labor costs at a minimum. A Handy bender for small slab bars and miscellaneous bending.

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Minneapolis, Minn.

per cent more this year than a year ago.

□ □ □

Moorlane Co., Tulsa, Okla., distributor for Tube-Turns Inc., Louisville, Ky., and other manufacturers of oilfield and refinery equipment, has opened an office at 322 Merchants and Manufacturers building, Houston, Tex., to serve gulf coast territory. E. L. McClain is district manager.

□ □ □

Pressed Steel Tank Co., Milwaukee, is operating 24 hours a day, meeting demand of breweries for metal barrels for beer. Production facilities have been doubled. More than 125 breweries have placed orders for the Hackney metal barrel, showing a wide acceptance of this type of container.

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Steel castings for the Boulder dam tunnels are being made by the Southwest Foundry & Machine Co. Inc., 1481 Water street, Long Beach, Calif. The same company is making steel castings for Pine Canyon dam, Pasadena, Calif. The plant is operating day and night with 50 men, to maintain production schedules.

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Pittsburgh Lectromelt Furnace Corp., Pittsburgh, has sold to Western Electric Co., Hawthorne works, Chicago, its second Lectromelt furnace for production of low carbon, low manganese, high magnetic permeability metal and various alloy steels, tungsten, chromium and cobalt, in billets and castings.

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Utah Vanadium Corp., R. J. Evans, Felt building, Salt Lake City, president, has orders from Pittsburgh to ship 50 tons of concentrates monthly. Its property is in the Henry mountain zone, Green river district, and it has about 50,000 tons of ore ready for concentration. Shipment will be made by rail from Green River, Utah.

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International Nickel Co. has increased operations at its plant at Port Colborne, Ont. by putting into production two electrolytic nickel refining units. The Orford process plant at Coppercliff, Ont., has resumed production. New concentrating and sintering units have been put into operation at the Falconbridge mines smelter.

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Hart, Cooley & Highton Co., New Britain, Conn., and Tuttle & Bailey, Brooklyn, N. Y., manufacturers of metal grilles and registers have merged. The executive offices will be at New Britain and a newly-formed subsidiary, Tuttle & Bailey Inc., will have charge of the contract business.

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Kron Co., Bridgeport, Conn., manufacturer of industrial automatic dial scales, has appointed the following distributors for its complete line: Ebbert & Kirkman Co. Inc., 321 Brown-Marx building, Birmingham, Ala.; William N. Schwab, 783 East Seventeenth street, Los Angeles; Coe-Mantes Scale Co., 420 Market street, San Francisco.

□ □ □

Fresnillo Co., Fresnillo, Mexico, has installed a size S Lectromelt furnace for the manufacture of steel castings, steel cast tools, grinding balls and wearing mill liners. An accumulation of scrap will be utilized in this furnace. Current from water power will be used. The furnace will also produce high-strength and alloy iron castings and forging billets.

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Northern Conveyor & Mfg. Co., Janesville, Wis., has resumed full operation following increase in demand since its line has been redesigned. Beloit Iron Works, Beloit, Wis., which is enlarging its power plant, has placed an order for coal conveyors and Rock County Sugar Co., Janesville, has ordered a beet conveyor.

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Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., recently noted as having established a Texas sales district, in charge of E. E. Aldous, with R. J. Stakelum, assistant, with offices in the Petroleum building, Houston, Tex., has discontinued its New Orleans district office. In the future the port of New Orleans district, east of the Texas-Louisiana boundary, will be handled from the New Orleans sub-office, in charge of J. P. Pannell. The Texas sales district will not include Culberson, El Paso and Hudspeth counties, which will be handled by the Denver office of the Illinois Steel Co., Chicago, of which Edward M. Sparhawk is in charge.

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Tower Builders Inc., Los Angeles, was incorporated recently to fabricate steel transmission towers for high-tension electric power lines. It is jointly owned by Consolidated Steel Corp. and Blaw-Knox & Western Pipe Corp., both of Los Angeles. The latter firm was formed in 1932 by Blaw-Knox Co. and Western Pipe & Steel Co. to market road and contractors' equipment on the Pacific coast. Waller Taylor, president of Consolidated Steel Corp., is president; Howard Tallerday, president of Western Pipe & Steel Co., San Francisco, is vice president; L. N. Slater, vice president, Western Pipe & Steel Co., is secretary and treasurer. Award of 23,000 tons of transmission towers for Los Angeles has been made to Tower Builders Inc., and fabrication and galvanizing will be done at the plant of the Consolidated Steel Corp. at Los Angeles.

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New Trade Publications

CENTRIFUGAL PUMPS — Single stage centrifugal pumping units are described and illustrated in bulletin No. 218 issued by the Pennsylvania Pump & Compressor Co., Easton, Pa.

MOTORS—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a leaflet in its type FH split-phase motors for use with oil burners, fans and blowers, centrifugal pumps, grinders, small woodworking tools and similar industrial machines and domestic applications requiring quiet economical drive.

ARC WELDERS—Universal Power

Corp., 1719 Clarkstone road, Cleveland, has published a bulletin, No. 1056, on its shunt inductor welder motor-generator sets and No. 1057 on arc welding accessories and clothing.

ROLL GRINDING — Carborundum Co., Niagara Falls, N. Y., has published a 45-page treatise on roll grinding. It discusses various types of finishes and methods by which they are secured, types and characteristics of rolls, coolants and filters, wheel stresses and their effect on wheel selection, causes of scratches on work, and various types of roll-grinding machines and rolls.

VIBRATORS—A valve type vibrator for molding machines, matchplates, benches, sand chutes, dust arrestors and other types of installations is described in a bulletin recently issued by the Berkshire Mfg. Co., 1101 Power avenue, Cleveland. A feature claimed for the vibrator is the absence of a spring in the piston.

CONVEYOR BELT—B. F. Goodrich Rubber Co., Akron, O., has issued a four-page insert to its mechanical goods catalog covering general service conveyor belts and a hot material belt. The latter, it is claimed, increases the reasonable expectation of service for conveyor belts exposed to temperatures running up to 200 degrees Fahr.

BOILER REGULATOR — Northern Equipment Co., Erie, Pa., in a current bulletin illustrates its double control regulator, which feeds the boiler according to the rate of steam flow, with correction for water level changes. Illustrations are in color, showing interior views and charts and diagrams explain the text.

TRANSMISSION MACHINERY — A souvenir book of the Link-Belt exhibit at A Century of Progress, Chicago, entitled "Serving Industry's Needs in the Handling of Materials and the Positive Transmission of Power," contains reproductions of photographs and descriptions of various types of transmission equipment manufactured by the Link-Belt Co., 910 South Michigan avenue, Chicago.

SCREENS — Vibrating screens for handling a variety of materials are lustrated and described in book No. 1362 by the Link-Belt Co., 300 West Pershing road, Chicago. An unbalanced-pulley type with or without mechanism for changing the screen angle in service, and a heavy duty positive drive type with screen-angle changing mechanism are described.

COMPRESSORS—Sullivan Machinery Co., 400 North Michigan avenue, Chicago, has published two bulletins, one devoted to angle compressors, single types for gas and air, direct-connected and belt-driven; and an 8-inch stroke angle compressor direct-connected and belt-driven. The bulletins are well illustrated with diagrams and views of installations.

NICHROME—Driver-Harris Co., Harrison, N. J., has published a 60-page catalog covering properties and characteristics of alloys for electrical, mechanical and chemical purposes. The text includes data and other information on Nichrome and other alloys manufactured by that company. Information is given on the properties of metals and alloys. A charge of 25 cents is made for this volume.

Construction and Enterprise

New York

BUFFALO—John W. Cowper Co. has been awarded the general contract for a $250,000 warehouse and office building for the Danahy-Faxon Co., Buffalo.

NEW YORK—Amico Art Metal & Iron Co. Inc. has been incorporated with $5000 capital to manufacture metal products, by Robert L. Bergman, 234 Fifth avenue, New York.

New Jersey

HACKENSACK, N. J.—Bergen Iron & Engineering Co. has been incorporated with 1000 shares no par value to operate an iron works, by William De Lorenzo, 80 Main street, Hackensack, N. J.

Pennsylvania

PITTSBURGH — Pittsburgh Tool Knife & Mfg. Co., 7501 Thomas boulevard, has been incorporated to manufacture inserted tooth saws, shear blades, rivet sets, chisel blanks and allied products. James A. Carothers is president and H. J. Fullerton is secretary.

Ohio

CLEVELAND—Jordon Welding & Mfg. Co. has been incorporated with 150 shares no par value, by Roland R. Jordon and associates. Homer A. Miner, Western Reserve building, is attorney.

DOVER, O.—Wagner Bros., operators of a foundry, have incorporated the business as Wagner & Sons Inc., with $25,000 capital. Otto Wagner Jr. and Harry P. Wagner are incorporators.

Indiana

CONNERSVILLE, IND.—Starr Mfg. Co. has been incorporated with $10,000 capital to manufacture piston rings, by Adolph and William B. Starr.

GARY, IND.—Steel City Iron & Metal Co. Inc., has been incorporated with 100 shares no par value to deal in waste materials and metals, by Mayer Rabbowitz and Sam and Ben Olshansky.

Illinois

CHICAGO—United Coin Machine Mfg. Co., 69 West Washington street, room 1501, has been incorporated with 15 shares no par value to manufacture vending machines, by John A. Verhoeven, 69 West Washington street.

CHICAGO—Charpier Valve Co., 1404 West 103rd street, has been incorporated with 1280 shares no par value to deal in valves, engines, boilers, tools, etc., by Harry P. Munns, 127 North Dearborn street, Chicago.

CHICAGO—Consolidated Steel & Supply Co., 2631 Arthington street, has been incorporated with 50 shares no par value to sell steel, machinery and equipment, by Irving H. Abrams and associates.

CHICAGO——Reliable Engravers Inc., 609 Vedder street, has been incorporated with 50 shares no par value to manufacture dies and tools, by Harry E. Bollinger, 5448 Fulton street, Chicago.

CHICAGO—Gilco Mfg. Co., 3264 Grand

WHERE-TO-BUY

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AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS—See FERROALLOYS

ANGLES, CHANNELS—See BEAMS, CHANNELS, ANGLES

ANGLE IRON BENDERS
Excelsior Tool & Machine Co., Ridge and Jefferson Aves., East St. Louis, Ill.

ANODES (All Type)
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

ARBORS
Morse Twist Drill & Machine Co., New Bedford, Mass.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee.

BANDS—See HOOPS AND BANDS

BANDS (Iron and Steel)
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Republic Steel Corp. Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., Frick Bldg., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
McClintic-Marshall Corp., Bethlehem, Pa.

BARRELS (Plating)
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

BARS (Alloy)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Steel & Tube Co., Canton, O.

BARS (Concrete Reinforcing)
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 S. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS (Iron)—See IRON (Bar)

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEARINGS (Ball)
Bantam Ball Bearing Co., The, South Bend, Ind.

BEARINGS (Bronze)
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., 344-54 W. 6th St., Tarentum, Pa.

BEARINGS (Journal)
Bantam Ball Bearing Co., The, South Bend, Ind.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Roller)
Bantam Ball Bearing Co., The, South Bend, Ind.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Bantam Ball Bearing Co., The, South Bend, Ind.
Timken Roller Bearing Co., The, Canton, O.

BENDING AND STRAIGHTENING MACHINES
Alliance Machine Co., The, Alliance, O.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Bros. Co., 3126 Burleigh St., Milwaukee.
Morgan Engineering Co., The, Alliance, O.
Thomas Spacing Machine Co., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Construction Co., 1301 Koppers Bldg., Pittsburgh.
Youngstown Sheet & Tube Co., Youngstown, O.

BILLETS (Alloy and Carbon Steel)
Alan Wood Steel Co., Conshohocken, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.
Republic Steel Corp., Youngstown, O.
Timken Steel & Tube Co., Canton, O.
Washburn Wire Co., Phillipsdale, R. I.

BILLETS (Forging)
Alan Wood Steel Co., Conshohocken, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Timken Steel & Tube Co., Canton, O.

BILLETS AND BLOOMS
Alan Wood Steel Co., Conshohocken, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Timken Steel & Tube Co., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

BLAST FURNACE SPECIALTIES
Bailey, Wm. M., Co., 702 Magee Bldg., Pittsburgh, Pa.

BLAST FURNACES—See FURNACES (Blast)

BLOWERS
General Electric Co., Schenectady, N. Y.
Strong, Carlisle & Hammond Co., The, 1394 W. 3rd St., Cleveland, O.

BOILERS
Murray Iron Works Co., Burlington, Iowa.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILER TUBES—See TUBES (Boiler)

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.

BOLTS
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Jones & Laughlin Bldg., Pittsburgh, Pa.
Oliver Iron & Steel Corp., S. 10th & Muriel Sts., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson, Jos. T., & Son, Inc. 16th and Rockwell Sts. Chicago Ill.

BOXES (Annealing)
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.

BOXES (Case Hardening)
Strong, Carlisle & Hammond Co., The. 1394 W. 3rd St., Cleveland, O.

BOXES (Open Hearth Charging)
Morgan Engineering Co., The, Alliance, O.
Wellman Engineering Co. 7000 Central Ave., Cleveland, O.

BRAKES (Electric)
Cutler-Hammer, Inc., 1211 St. Paul Ave., Milwaukee, Wis.
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland, O.

BRICK (Fire Clay)
Eureka Fire Brick Works, 1015 House Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., The, 1394 W. 3rd St., Cleveland, O.

BRICK (Silicon Carbide)
Norton Co., Worcester, Mass.

BRIDGE CRANES (Ore and Coal Handling)
Alliance Machine Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland.

BRIDGES, BUILDINGS, VIADUCTS, STACKS
American Bridge Co., Frick Bldg., Pittsburgh, Pa
Belmont Iron Works, 22nd and Washington Ave., Philadelphia, Pa.
International-Stacey Corp., Columbus, O.
McClintic-Marshall Corp., Bethlehem, Pa.
Ohio Structural Steel Co., The, Newton Falls, O.
Truscon Steel Co., Youngstown, O.

avenue, has been incorporated with 500 shares no par value to manufacture stampings, spinnings, lamps and parts by John C. Kayner and associates, 1628 American Bond & Mortgage building, 127 North Dearborn street.

CHICAGO—Colley-Bitler Co., 227 South Green street, has been incorporated with 90 shares no par value to manufacture heating, ventilating and refrigerating systems, by Fackler & Owens, 33 North La Salle street, Chicago.

Southern States

MEMPHIS, TENN.—Plant of the American Car & Foundry Co. at Memphis has been sold to Frank Perlman, after being idle more than ten years. It is understood it will be dismantled.

Oklahoma

OKLAHOMA CITY, OKLA.—American Steel Form Co. has been incorporated with $25,000 capital, by R. E. Casey, Ramsey Tower building.

SAND SPRINGS, OKLA. — Tulsa Stove & Foundry Co., recently reorganized, has resumed production of gray iron castings at its plant here and plans establishment of a machine shop. Larry Hinz is general manager.

Texas

BIG SANDY, TEX.—Rex Refining Co. has been incorporated with 250 shares no par value to build and operate an oil refinery here, by C. T. Morris, president.

DALLAS, TEX. — Beverage Cooler Corp. has been incorporated with $10,000 capital to manufacture refrigeration equipment, by George T. Sprau, 2422 Alamo street.

LONGVIEW, TEX.—Gregg-Tex Gasoline Corp., Keith Jones, Shreveport, La., president and manager, is preparing to erect a natural gasoline plant near here with daily capacity of 24,000 gallons, at a cost of about $250,000. Clark Sample is local manager.

SAN ANTONIO, TEX.—Alamo Iron & Salvage Co. has been incorporated with $1500 capital to conduct a scrap business, by John K. Fritz, president and manager.

Wisconsin

BEAVER DAM, WIS.—The city council has engaged Jerry Donohue Engineering Co., Sheboygan, Wis., to do all designing and supervisory work on the new $65,000 sewage disposal plant.

BLOOMER, WIS.—Bloomer Beverage Co. Inc., will spend about $30,000 in reconditioning its brewery and installing modern equipment.

CUDAHY, WIS.—Real estate, machinery and improvements of the Fisk Rubber Co., a division of the Federal Rubber Co., will be sold at auction Aug. 15, 16 and 17, by Samuel T. Freeman & Co., Philadelphia, auctioneers.

GREEN BAY, WIS.—Rahr-Green Bay Brewing Co., 320 East Walnut street, has placed contracts for construction and equipment costing about $75,000. Architect G. J. Feldhausen, 1540 Elm street, is in charge.

MADISON, WIS.—Metropolitan sewerage district commission is about ready for bids for new equipment for handling 1,500,000 gallons daily. E. E. Baker is city engineer.

MANITOWOC, WIS.—Hamacheck-Bleser Buick Co., 822 Franklin street, is preparing to build a garage and machine shop, 50 x 120 feet, at 900 Quay street, to cost about $25,000.

MILWAUKEE—Luther Grinder & Tool Co., 112 South Second street, has taken a contract to supply 26 power grinders to the United States forestry department at $112 each.

MILWAUKEE—Otto Weigelt, coppersmith, 1336 North Ninth street, is building a new shop, 44 x 50 feet, for the manufacture of beer coils and similar equipment.

MILWAUKEE—Geuder, Paeschke & Frey Co., manufacturer of tin, sheet metal and enameled utensils, has let contracts for erection of an additional production unit 40 x 63 feet, at 324 North Fifteenth street.

MILWAUKEE—Charles A. Krause Milling Co., corn products, has let contract to Klug & Smith Co., 111 East Wisconsin avenue, for four grain storage tanks and intermediate bins with capacity for 300,000 bushels.

MILWAUKEE — Wisconsin Co-Operative Brewery Inc. has been incorporated to build a $200,000 brewing and malting plant in the town of Lake, Milwaukee county. Ray C. Dietrich, 647 West Virginia street, is architect.

MILWAUKEE—Industrial Heating & Engineering Co., 823 North Broadway, general contractor on the $100,000 power plant at the United States veterans' home, Milwaukee, has sublet boiler equipment to the Titusville Iron Works, Titusville, Pa.

MILWAUKEE—Rickel Malting Co., 1824 Adelaide street, Detroit, has placed an order with the Galland Henning Mfg. Co., 2755 South Thirty-first street, Milwaukee, for steel drums, tanks, kiln equipment, perforated floor equipment and similar products for a $200,000 addition to its malting plant.

MILWAUKEE—Chicago, Milwaukee, St. Paul & Pacific has made an appropriation to its car shops at West Milwaukee for construction of an experimental streamlined passenger coach to cost $21,000. Saving of $13,000 from conventional coach costs results from all-welded design with lighter plates. K. F. Nystrom is superintendent in charge.

OSHKOSH, WIS.—The city council has voted to build a sewage disposal plant costing $880,000, contingent upon R. F. C. loan.

TWO RIVERS, WIS.—Public utilities commission has engaged Jerry Donahue Engineering Co., 608 North Eighth street, Sheboygan, Wis., to prepare plans for a water filtration plant estimated to cost $90,000. E. J. Donnelly is city manager.

WISCONSIN RAPIDS, WIS.—The governor has signed the bill authorizing a $3,500,000 hydroelectric improvement project by the Wisconsin Valley Improvement Co., including the Knowlton power plant. Main items: Power house, $218,700; equipment, $250,000; transmission line, $110,500; dam and dike, $450,000; miscellaneous, $211,500. George W. Mead of this city is president.

Iowa

DAVENPORT, IOWA—Means Machinery Corp. has been incorporated with $10,000 capital by Jerry Means, president; H. B. Harbeck, vice president, and R. D. Wells, secretary-treasurer.

Colorado

DENVER—Bureau of reclamation will open bids Aug. 18 two or four 82,500-kilovolt ampere and one 40,000-kilovolt ampere vertical shaft alternating current generators for Boulder dam project.

Arizona

PHOENIX, ARIZ.—Phoenix Carbonic Ice Corp., 131 West Jefferson street, plans to build a dry ice manufacturing plant and carbonic gas manufacturing unit at Magnolia street and Nineteenth avenue, to cost $50,000. Capt. James M. Palmer is president.

Pacific Coast

ARCADIA, CALIF. — Lindgren & Swinerton Inc., 523 West Sixth street, Los Angeles, has a contract for a brewery of 100,000 barrels annual capacity for Schmidt Brewing Co. on Santa Anita avenue, to cost $200,000.

LOS ANGELES—Nelli Art Bronze Foundry Inc., 2313 Garnett street, will build a plant at 3426 Union Pacific avenue. Arthur W. Hawes, 1047 South Orange Grove avenue, is architect.

LOS ANGELES—General Cable Corp., 939 East Fourth street, will build a cable manufacturing plant to manufacture the copper cable on contract for the Los Angeles water and power bureau line from Boulder Dam. It consists of six cables 271 miles long, to cost $2,399,800.

BELLINGHAM, WASH.—W. W. Fairburn, president of the Whatcom-Skagit Brewing Co., announces projected construction of a new plant, for which equipment has been bought, building to be started in August. A cold storage plant is also planned. J. H. Trede is in charge of construction.

RIDGEFIELD, WASH.—City is considering construction of a municipal water system financed by federal funds and a bond issue. Estimates have been prepared by Charles Deako, Vancouver, Wash., engineer.

WHERE-TO-BUY

BUCKETS (Clam Shell, Dragline, Grab, Single Line)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

BUILDINGS (Steel)—See BRIDGES, ETC.

BULLDOZERS
Logemann Bros. Co., 3126 Burleigh St., Milwaukee.

BURNERS (Acetylene)—See TORCHES AND BURNERS

BURNERS (Automatic)
American Heat Economy Bureau Inc., Wabash Bldg., Pittsburgh, Pa.
Wean Engineering Co., Warren, O.

BURNERS (Fuel, Oil, Gas, Combination)
Wean Engineering Co., Warren, O.

BUSHINGS (Bronze)
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., 344-54 W. 6th St., Tarentum, Pa.

BY-PRODUCT PLANTS
Koppers Construction Co., 1301 Koppers Bldg., Pittsburgh, Pa.

CADMIUM
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

CADMIUM PLATING PROCESS
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

CARBIDE
Linde Air Products Co., 30 E. 42nd St., New York City.

CAR DUMPERS
Alliance Machine Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CARS (Charging)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.
Morgan Engineering Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CARS (Industrial and Mining)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland.
Bethlehem Steel Co., Bethlehem, Pa.

CARS (Scale)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.

CASTINGS (Acid Resisting)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Driver-Harris Co., Harrison, N. J.
International Nickel Co., Inc., 67 Wall St., New York City.
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., 344-54 W. 6th St., Tarentum, Pa.

CASTINGS (Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Detroit Alloy Steel Co., Foot of Iron St., Detroit, Mich.
Pittsburgh Rolls Corp., 41st and Willow Sts., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.

CASTINGS (Brass, Bronze, Copper, Aluminum)
Bethlehem Steel Co., Bethlehem, Pa.
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Morgan Engineering Co., The, Alliance, O.
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., 344-54 W. 6th St., Tarentum, Pa.

CASTINGS (Electric Steel)
Pittsburgh Lectromelt Furnace Corp., P. O. Box 1125, Pittsburgh, Pa.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

CASTINGS (Gray Iron)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

CASTINGS (Heat Resisting)
Driver-Harris Co., Harrison, N. J.

CASTINGS (Malleable)
Peoria Malleable Castings Co., Peoria, Ill.

CASTINGS (Steel)
Allegheny Steel Co., Brackenridge, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Pittsburgh Rolls Corp., 41st and Willow Sts., Pittsburgh, Pa.
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

CASTINGS (Worm & Gear Bronze)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

CEMENT (High Temperature)
Norton Company, Worcester, Mass.
Strong, Carlisle & Hammond Co., The, 1394 W. 3rd St., Cleveland, O.

CHAIN (Sprocket)
Peoria Malleable Castings Co., Peoria, Ill.

CHARGING MACHINES (Cupola)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.
Morgan Engineering Co., The, Alliance, O.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CHARGING MACHINES (Open Hearth)
Morgan Engineering Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CHROME ORE
Samuel Frank, & Co., Inc., Harrison Bldg., Philadelphia.

CHROMIUM METAL
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

CLEANING SPECIALTIES
American Chemical Paint Co., Ambler, Pa.

COAL AND COKE
Alan Wood Steel Co., Conshohocken, Pa.
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Hanna Furnace Corp., The, Detroit, Mich.
Interlake Iron Corp., Union Trust Bldg., Cleveland, O.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Shenango Furnace Co., Oliver Bldg., Pittsburgh, Pa.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

COAL, ORE AND ASH HANDLING MACHINERY
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.

COKE—See COAL AND COKE

COKE OVEN MACHINERY
Alliance Machine Co., The, Alliance, O.
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland.
Morgan Engineering Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

COKE OVENS (By-Product)
Koppers Construction Co. 1301 Koppers Bldg., Pittsburgh.

COMBUSTION BULBS
Norton Company, Worcester, Mass.

COMBUSTION CONTROLS
Morgan Construction Co., Worcester, Mass.

COMPENSATORS (Automatic)
Electric Controller & Mfg. Co., 2098 E. 79th St., Cleveland, O.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.

CONCRETE REINFORCING BARS —See BARS (Concrete Reinforcing)

CONDENSERS (Surface, Barometric, Multi-Jet)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

CONDUITS (Electric)
Steel & Tubes, Inc., 224 E. 121st St., Cleveland, O.
Youngstown Sheet & Tube Co., Youngstown, O.

CONTRACTORS—See ENGINEERS AND CONTRACTORS

CONTROLLERS (Electric)
Cutler-Hammer, Inc., 1211 St. Paul Ave., Milwaukee, Wis.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

CONVEYER BELTS (High & Low Temperature)
Wickwire Spencer Steel Co., 41 E. 42nd St., New York City.

COTTER PINS
Hindley Mfg. Co., Valley Falls, R. I.

COUPLINGS (Flexible)
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

CRANES (Charging)
Alliance Machine Co., The, Alliance, O.
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.
Morgan Engineering Co., Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CRANES (Creeper, Erection)
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.

CRANES (Electric)
Alliance Machine Co., The, Alliance, O.
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.
Morgan Engineering Co., Alliance, O.
Shaw-Box Crane & Hoist Co., Inc., 406 Broadway, Muskegon, Mich.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CRANES (Gantry)
Alliance Machine Co., The, Alliance, O.
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CRANES (Hand)
Shaw-Box Crane & Hoist Co., Inc., 406 Broadway, Muskegon, Mich.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CRANES (Jib)
Alliance Machine Co., The, Alliance, O.
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

CRANES (Locomotive)
Harnischfeger Corp., 411 W. National Ave., Milwaukee, Wis.

CUTTING AND WELDING—See WELDING

CUTTING OILS
Sun Oil Co., 1608 Walnut St., Philadelphia, Pa.

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Scaife, Wm. B., & Sons Co., Oakmont, Pa.

DEOXIDIZERS
Vanadium Corp. of America, 120 Broadway, New York City.

DIE BLOCKS
Bethlehem Steel Co., Bethlehem, Pa.
Bissett Steel Co., 945 E. 67th St., Cleveland, O.

DIE HEADS
Landis Machine Co., Waynesboro, Pa.

DOORS AND SHUTTERS (Steel, Fire and Rolling)
Truscon Steel Co., Pressed Steel Div., Youngstown, O.

DRILLING MACHINES (Multiple, Heavy Duty)
Thomas Spacing Machine Co., Pittsburgh, Pa.

DRILLING MACHINES (Radial)
Thomas Spacing Machine Co., Pittsburgh, Pa.

DRILLS (Twist)—See TWIST DRILLS

DRIVES (Cut Herringbone Gears)
Lewis Foundry & Machine Co., P. O. Box 1591, Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.

DRIVES (Multi V-Belt)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ECONOMIC SERVICE
Brookmire, The, Economic Service, Inc., 551 Fifth Ave., New York, N. Y.

ELECTRIC HEATING ELEMENTS
Driver-Harris Co., Harrison, N. J.

ELECTRIC WELDING—See WELDING

ELECTRICAL EQUIPMENT
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

ENGINEERS AND CONTRACTORS
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.
Morgan Engineering Co., The, Alliance, O.
Wean Engineering Co., Warren, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

ENGINEERS (Consulting)
Perin Engineering Co., Inc., 11 West 42nd St., New York City.
Wean Engineering Co., Warren, O.

ENGINEERS, CONSULTING (By-Product Coke Oven & Gas Plants)
Koppers Construction Co., 1301 Koppers Bldg., Pittsburgh.

ENGINEERS, CONSULTING (Open Hearth)
Buell, Wm. C., Jr., P. O. Box 282, Cleveland, O.

EQUIPMENT (Rebuilt)
Ritterbush & Co., Inc., 30 Church St., New York City.

FACING MACHINES (Structural)
Thomas Spacing Machine Co., Pittsburgh, Pa.

FANS (Portable)
Perkins, B. F., & Son, Inc., Holyoke, Mass.

FERROALLOYS
International Nickel Co., Inc., 67 Wall St., New York City.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Ohio Ferro-Alloys Corp., Canton, O.
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Ohio Ferro Alloys Corp., Citizens Bldg., Canton, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Vanadium Corp. of America, 120 Broadway, New York City.